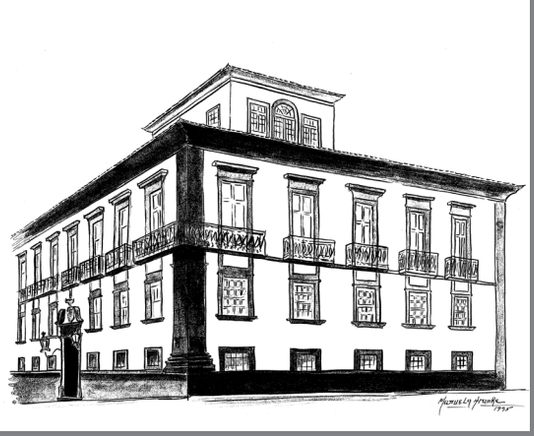


BOLETIM

MUSEU DE HISTÓRIA NATURAL DO FUNCHAL

Vol. LXXV (2025), Art. 371

ISSN 2183-279X (online edition) | Available online at: http://boletim.cm-funchal.pt

Dezembro de 2025 - FUNCHAL - MADEIRA
Editado pela Câmara Municipal do Funchal

FICHA TÉCNICA // TECHNICAL INFORMATION

Título // Title:
Boletim do Museu de História Natural do Funchal
Vol. LXXV (371), 2025

Editado por // Edited by:
Câmara Municipal do Funchal

Editor:
Manuel José Biscoito
Divisão de Ciência da CMF
E-mail: manuel.biscoito@cm-funchal.pt

Co-editores // Associated editors:
António Franquinho Aguiar
Laboratório de Qualidade Agrícola da Madeira
E-mail: antonio.aguiar@madeira.gov.pt
Ricardo Araújo
Museu de História Natural do Funchal
E-mail: ricardo.araujo@cm-funchal.pt
Francesca Zino
E-mail: f@zino.co.uk

Secretária editorial // Editorial board secretary:
Ivelice Gonçalves
Divisão de Ciência da CMF
E-mail: ivelice.goncalves@cm-funchal.pt

Painel editorial // Editorial board:
Manuel José Biscoito (POR)

Composição // Desktop publishing:
Ivelice Gonçalves
Museu de História Natural do Funchal

Arranjo gráfico // Layout:
Ivelice Gonçalves
Virgílio Gomes

Capa // Cover:
Desenho de contraste // Contrast mark:
Manuela Aranha
Fotografias // Photographs:
António Miguel Franquinho Aguiar
Buprestis novemmaculata
Thanasimus formicarius
Phaenops cyanea
(ver // see art. 371, p. 29)

Secretariado e correspondência // Address:
Museu de História Natural do Funchal
Rua da Mouraria, 31
9004-546 Funchal
Madeira – Portugal
Telefone // Phone: (+351) 291 229 761
E-mail: mmf.pubs@cm-funchal.pt

Website:
http://boletim.cm-funchal.pt

ISSN (edição online // online edition): 2183-279X

ISSN (edição impressa // printed edition): 0870-3876

Depósito legal // Legal deposit: no. 228969/05

BOLETIM

MUSEU DE HISTÓRIA NATURAL DO FUNCHAL

Vol. LXXV (2025), Art. 371

ISSN 2183-279X (online edition) | | Available online at: http://boletim.cm-funchal.pt

Dezembro de 2025 - FUNCHAL - MADEIRA
Editado pela Câmara Municipal do Funchal

ÍNDICE // INDEX

BOLETIM

MUSEU DE HISTÓRIA NATURAL DO FUNCHAL

Vol. LXXV (2025), Art. 371: 5-31

ISSN 2183-279X (online edition) | | Available online at: http://boletim.cm-funchal.pt

Coleoptera associated with planted pine forests in Madeira and Porto Santo Islands – Species diversity, ecology and new records

With 9 figures, 2 tables and 2 plates

By A. M. Franquinho Aguiar [1] *, Délia Cravo [1] & Miguel M. Andrade [2]

[1] *Laboratório de Qualidade Agrícola, Caminho Municipal dos Caboucos, 61, 9135-372 Camacha, Madeira, Portugal.*
[2] *Rua das Virtudes, Barreiros Golden I, Bloco I, R/C B, 9000-645 Funchal, Madeira, Portugal.*
** Corresponding author: antonio.aguiar@madeira.gov.pt*

ABSTRACT: Beetle diversity associated with planted pine forests is analysed based on a large number of specimens captured in a network of pheromone traps for the pine sawyer beetle, *Monochamus galloprovincialis* (Olivier). In total, we identified 138 taxa belonging to 39 families, with Cerambycidae and Curculionidae being the most frequent and representative. Distribution and annual activity data are provided for the most frequent species of these two families. The following 15 species are reported as new records for the Madeira Archipelago: *Biphyllus lunatus* (Fabricius), *Buprestis novemmaculata* s. str. Linnaeus, *Chalcophora massiliensis* (Villers), *Phaenops cyanea* Fabricius, *Rhagium inquisitor* (Linnaeus), *Clambus simsoni* Blackburn, *Thanasimus formicarius* (Linnaeus), *Crypturgus pusillus* (Gyllenhal), *Hylastes attenuatus* Erichson, *Agathidium arcticum* Thomson, *Leiodes calcarata* (Erichson), *Litargus balteatus* LeConte, *Nudobius collaris* (Erichson), *Corticeus pini* (Panzer) and *Pentaphyllus testaceus* (Hellwig). The following are new records for Porto Santo Island: *Hylurgus ligniperda* (F.), *Monochamus galloprovincialis* (Olivier), *Oxypleurus nodieri* Mulsant, *Tomicus destruens* (Woll.) and *Trichoferus fasciculatus senex* (Woll.).

Keywords: Beetle fauna, *Pinus pinaster*, *Pinus halepensis*, pheromone multi-funnel traps, Madeira Archipelago, Macaronesia.

Received: 18 December 2025; Available online: 31 December 2025; Published: 31 December 2025

RESUMO: A diversidade de escaravelhos associada aos pinhais plantados nas ilhas da Madeira e Porto Santo é analisada com base num grande volume de espécimes capturados numa rede de armadilhas com feromonas para o longicórnio-do-pinheiro, *Monochamus galloprovincialis* (Olivier). No total, foram identificados 138 taxa pertencentes a 39 famílias, sendo Cerambycidae e Curculionidae as mais frequentes e representativas. São fornecidos dados de distribuição e atividade anual para as espécies identificadas destas duas famílias. As seguintes 15 espécies são apresentadas como novos registos para a Ilha da Madeira e para o arquipélago: *Biphyllus lunatus* (Fabricius), *Buprestis novemmaculata* s. str. Linnaeus, *Chalcophora massiliensis* (Villers), *Phaenops cyanea* Fabricius, *Rhagium inquisitor* (Linnaeus), *Clambus simsoni* Blackburn, *Thanasimus formicarius* (Linnaeus), *Crypturgus pusillus* (Gyllenhal), *Hylastes attenuatus* Erichson, *Agathidium arcticum* Thomson, *Leiodes calcarata* (Erichson), *Litargus balteatus* LeConte, *Nudobius collaris* (Erichson), *Corticeus pini* (Panzer) e *Pentaphyllus testaceus* (Hellwig). As espécies seguintes são novos registos para a Ilha de Porto Santo: *Hylurgus ligniperda* (F.), *Monochamus galloprovincialis* (Olivier), *Oxypleurus nodieri* Mulsant, *Tomicus destruens* (Woll.) e *Trichoferus fasciculatus senex* (Woll.).

Palavras-chave: Fauna de escaravelhos, *Pinus pinaster*, *Pinus halepensis*, armadilhas multifunil com feromonas, Arquipélago da Madeira, Macaronésia.

INTRODUCTION

Introduced pine forests in Madeira are primarily composed of *Pinus pinaster* Aiton (Maritime Pine), which, according to the latest Forestry Inventory (IFRAM2), occupies 4,120 ha or 24% of the total cultivated forest area. On the neighbouring island of Porto Santo, the selected pine was *Pinus halepensis* Miller (Aleppo Pine), adapted to drier climates, which occupies 76% of the much smaller 277 ha area.

The first detection of the pinewood-nematode (*Bursaphelenchus xylophilus* (Steiner & Bührer) Nickle) in 2009 and its subsequent impact on Madeira's pine forests prompted the local Institute of Forests and Nature Conservation (IFCN) to design and implement a containment plan. This plan included annual monitoring of the nematode vector, the pine sawyer beetle *Monochamus galloprovincialis* (Olivier), which has been spreading in Madeira since at least 1992 (Erber & Aguiar, 1996). Annual monitoring and control were carried out using a network of 400 multi-funnel pheromone traps, "Galloprotect 2D," designed for mass trapping of *M. galloprovincialis*. This product, in addition to the aggregation pheromone monochamol (2-undecyloxy-1-ethanol), contains kairomonal substances such as ipsenol and methyl-butenol, which are bark beetle pheromones. The aggregation pheromone, together with the other kairomonal substances, was highly effective in attracting Coleoptera, which accounted for 92% of the collected specimens, although the remaining 8% included representatives of 10 other insect orders that will not be discussed here.

MATERIAL AND METHODS

This trap network was active from 2014 to 2019, and its weekly collected material was sent to our laboratory to retrieve specimens of *M. galloprovincialis* for testing for the presence of *B. xylophilus*, and to identify all other insects. In total, we processed 6,907 samples from Madeira (one for each trap, locality, and collecting date) and 79 from Porto Santo, totalling 13,022 and 122 insect specimens, respectively.

Photographs of dried specimens were taken using a LEICA M125 motorised stereo microscope with a 12 MP FLEXACAM C1 digital camera and the LEICA LAS X software package with multifocus module for image stacking. Post-processing of the images and creation of the plates were carried out with Adobe Photoshop® and Topaz Labs® image editing software. Specimens are deposited in the following collections:

cFA – Private collection of António Aguiar
cMMA – Private collection of Miguel M. Andrade
ICLAM – Madeira Agricultural Laboratory entomological collection

RESULTS

Coleoptera Species Diversity

The material studied, collected in Madeira and Porto Santo islands, comprising 11,881 specimens, included 138 taxa from 39 different families. The four most numerous families accounted for up to 84% of the total specimens (Table 1) (see end of article): Cerambycidae with 45%, Curculionidae with 21%, Cleridae with 12%, and Monotomidae with 6%. The remaining 35 families made up the remaining 16% of the material. All these species are listed in Table 2 (see end of article), ordered alphabetically by family.

Regarding the feeding habits, 67% of the specimens are xylophagous, 21% are predators, and 8% are fungivorous. The remaining 4% have varied diets, including saprophagous, phytophagous, saproxylic, pollinophagous, omnivorous, and coprophagous regimens. In terms of colonisation status, 91% of the specimens are introduced species, while the remainder are native species or species with undetermined status.

Results for Madeira Island

Family **Cerambycidae**

The efficacy of the pheromone used in the traps is reflected in the number of collected specimens belonging to this family. In total, we identified 11 species with varying importance to pines. The most frequent were *Arhopalus syriacus* (Reitter), *Monochamus galloprovincialis* (Olivier) and *Arhopalus ferus* (Mulsant), which comprised almost 99% of the Cerambycid material. These are important xylophagous species whose larvae are developing in the wood of dead or dying Pinus trees, mainly those affected by the pine nematode or diseases caused by microorganisms.

A second group of species, designated here as secondary wood-boring cerambycids, includes *Arhopalus rusticus* (L.), *Hylotrupes bajulus* (L.), and *Rhagium inquisitor* L. The latter is a new record for Madeira and will be discussed, along with other new records, in a separate section of this paper. These species can attack the wood of maritime pine, but were much less frequent and therefore rarer, or they prefer other types of trees. The remaining five species: *Blabinotus spinicollis* Woll., *Clytus arietis* (L.), *Phoracanta semipunctata* (F.), *Phymatodes testaceus* (L.), and *Trichoferus fasciculatus senex* (Woll.), although wood-boring, do not feed on maritime pine and can be classified as indifferent to this resinous tree.

1 – ***Arhopalus syriacus*** (Reitter, 1895)

This was the most common species present in the material studied. The presence of this cerambycid beetle in Madeira has been known since 1981 (Serrano, 1988). It has a wide distribution, encompassing Mediterranean Europe, North Africa, and Asia Minor. In Macaronesia, it is also found in the Azores and Canary Islands (Sama & Löbl, 2010). In Madeira, we identified it in all the municipalities except Santa Cruz (Fig. 1) (see end of article). The adults are active from April or May until October on the south coast, and from May until September in the north.

2 – ***Monochamus galloprovincialis*** (Olivier, 1795)

This large species was, according to Erber & Aguiar (1996), first collected in Madeira by Dr. Frank Zino in Funchal, probably introduced passively from Portugal or Spain in pinewood pallets infested with the species. Additional specimens collected in various localities across the island between 1992 and 1995 indicate that the species was multiplying and spreading independently during this period. Currently, *M. galloprovincialis* is present in all the municipalities of Madeira (Fig. 2) (see end of article). The adults are active for 6 to 8 months, from April or May until November or December. The lifecycle is univoltine, with population peaks in June and September.

3 – ***Arhopalus ferus*** (Mulsant, 1839)

Although far less numerous than the previous ones, this species was also captured in all municipalities except Santa Cruz (Fig. 3) (see end of article). The larvae develop mainly in pine trees, and more rarely in fir trees (*Abies* spp.). The first record of its presence in Madeira is by Wollaston (1857), and it is considered common between 80 and 1450 m altitude. Its worldwide distribution is similar to that of the previous species.

Adults are active on the south coast from May to September in the western zone (municipalities of Calheta, Ponta do Sol and Ribeira Brava). These municipalities together have the largest area of maritime pine – 1,623 ha. On the north coast, this period can last three to four months, with no activity from October onwards.

Family **Curculionidae**

The second largest family is the Curculionidae, comprising 21% of the identified beetles, with a total of 27 different species. Within this group, primary wood-boring beetles account for 93% of the total and include the following species: *Hylurgus ligniperda* (F.), *Tomicus destruens* (Woll.), *Orthotomicus erosus* (Woll.), *Hylastes attenuatus* Erichson, and *Pissodes castaneus* (De Geer). All these species develop in the wood of the maritime pine.

1 – ***Hylurgus ligniperda*** (Fabricius, 1787)

This weevil from the subfamily Scolytinae was likely introduced to Madeira along with the maritime pine or other resinous trees, as its presence is already mentioned by Wollaston (1854) in his monumental work on the beetles of Madeira, *Insecta Maderensia*.

This species was also captured in all municipalities, with the exception of Santa Cruz (Fig. 4) (see end of article), and was the third most numerous species sampled during monitoring. The larvae attack the roots of the pine, to which they can transmit mycoses, but they can also develop in the stumps of felled pine trees.

The period of adult activity on the south coast can last from five to eight months, but they generally begin to appear in May, and their numbers drop significantly from August onwards, although some can be found until December. The situation on the north coast appears to be identical. Throughout the distribution area, a consistent peak in captures is observed in July.

2 – ***Tomicus destruens*** Wollaston, 1865

This species has often been confused with the closely related *T. piniperda* (L.). It has a circum-Mediterranean distribution (Knížek, 2011), but, curiously, Wollaston (1865) described it as a native species of Madeira.

Its preferred hosts are pine trees, although it can attack other conifers. Several authors consider it a rather aggressive species in relation to the Mediterranean pine species *Pinus pinaster*, *P. pinea*, and *P. halepensis* (Vasconcelos *et al*., 2003; Faccoli, 2007).

Monitoring has detected the presence of *T. destruens* in all municipalities of Madeira Island (Fig. 5) (see end of article), and adult activity appears to be concentrated in May and June.

3 – ***Orthotomicus erosus*** (Wollaston, 1857)

Another Scolytinae species, originally described as native to Madeira by Wollaston (1857), but its known distribution now covers much of Western Europe (Knížek, 2011). It mainly attacks pine trees but can also colonise other conifers.

Adults were captured in almost all municipalities of Madeira, except Funchal and Santa Cruz, as shown in Fig. 6 (see end of article). In the southern municipalities, the activity period occurs between May and September, while in São Vicente, it occurs between June and September.

Overall, there appear to be capture peaks in July and September. In addition to the municipalities not mentioned above, Machico, Santana and Porto Moniz were excluded from the scheme due to the insignificant number of adults captured.

4 – ***Hylastes attenuatus*** Erichson, 1836

This Scolytinae species appears to be widely distributed in Europe, from Mediterranean countries to Scandinavia (Knížek, 2011).

It was first recorded in Madeira by Erber & Hinterseher (1988), but apparently was confused with the closely related species, *Hylastes angustatus* (Herbst).

It can attack pine roots and seedlings and colonise stumps of felled trees. Monitoring enabled the capture of adults in all municipalities except Santa Cruz (Fig. 7) (see end of article). Additionally, the municipalities of Machico, Santana and Porto Moniz were excluded from the scheme due to the low number of adults captured. In Calheta, the municipality with the most data, adults are active from May to September, with a peak in May. In the other municipalities on the south coast, adults were only captured between May and July, as well as in São Vicente, in the north.

5 – ***Pissodes castaneus*** (De Geer, 1775)

This weevil, common in the pine forests of central and northern Europe and introduced to the Nearctic and Neotropical regions (Alonzo-Zarazaga, 2013). It must have been brought to Madeira long ago with the maritime pine or other conifers, and was first mentioned by Wollaston (1854), although under the name *Pissodes notatus* Sturm. Currently, according to Stüben (2017), it is present throughout the Madeira Archipelago.

It attacks young trees and weakened adult trees, and in addition to pines, it can also attack conifers such as firs and larches. It was captured in low numbers in all municipalities except Funchal and Santa Cruz (Fig. 8) (see end of article).

Due to this situation, it is not possible to have a very precise idea of the activity period of the adults, but it was

found that in Calheta, they were captured from April to July, with a peak in May, and in São Vicente between March and November, although there are no data for August and September.

The remaining 22 recorded species of Curculionidae (7%) include secondary wood-boring beetles (some attack the wood, others only the bark), and others have no direct relationship with the maritime pine. They will be listed later (Table 2) (see end of article), in the complete list of collected species.

Family **Cleridae**

This is the third most numerous family in terms of specimens collected, accounting for 12% of the total. It contains a single species, *Thanasimus formicarius* (L.), an important predator of xylophagous beetles on resinous conifers. This species will be discussed later in the section dedicated to new records.

Family **Monotomidae**

Representing 6% of the specimens collected, two species are present: *Monotoma spinicollis* Aubé and *Rhizophagus depressus* (F.). The former, represented by a single specimen, is a mycetophagous species that lives under the bark, while the latter is a predatory species that lives and hunts in bark-beetle galleries.

Results for Porto Santo Island

In contrast, the forest context of the neighbouring island of Porto Santo differs markedly from that of Madeira. Porto Santo lacks natural forest, and its cultivated forest covers 362 hectares, representing only 8% of the total area. The diversity of resinous tree species in the cultivated forest is also very low. Aleppo pine (*Pinus halepensis* Mill.) is the most widely cultivated species, as it is better adapted to environments with limited water availability, and occupies 277 hectares. The second most cultivated species is Monterey cypress (*Cupressus macrocarpa* (Hartw.) Bartel), which covers 86 hectares. In comparison, the area of cultivated forest on Madeira Island is 47 times larger than that of Porto Santo.

We analysed 78 samples from 11 traps placed in different locations. In total, 122 insects were identified, the vast majority belonging to the order Coleoptera (97%), with the remainder from the orders Hymenoptera (2%) and Dictyoptera (1%). Among the Coleoptera captured in Porto Santo, only six families are represented, and of these, as in Madeira, only the Cerambycidae and Curculionidae families, which account for almost 90% of the captured Coleoptera, could include xylophagous species of significance to the Aleppo pine.

Family **Cerambycidae**

Five species belonging to the Cerambycidae were identified in the material from Porto Santo. In order of decreasing number of captured specimens, they are: *Trichoferus fasciculatus* ssp. senex (Woll.), *Arhopalus syriacus* (Reitter), *Oxypleurus nodieri* Mulsant, *Arhopalus ferus* (Mulsant), and *Monochamus galloprovincialis* (Olivier).

All these species are also present in Madeira; however, the most abundant species in Madeira, *A. syriacus*, ranks second in Porto Santo, where the most numerous was *T. fasciculatus senex*. The latter is a Macaronesian subspecies that, despite being the most frequently captured (44%), does not appear to be associated with pines or other conifers, but rather with various deciduous species, including the fig tree, *Ficus carica* (Hoskovec *et al*., 2026), which is quite common on Porto Santo.

The third most numerous species, *O. nodieri*, develops on *Pinus* spp., which in Porto Santo is represented by the dominant cultivated species, *P. halepensis*, the Aleppo pine. The two remaining species are xylophagous on pines. *A. ferus* prefers trees that have died from disease or fire. Regarding *M. galloprovincialis*, this was the first specimen (a male) detected on the island, but no further specimens were collected since, indicating that it was an isolated individual.

Family **Curculionidae**

The second family of beetles important to the Aleppo pine is the Curculionidae, from which a small number of specimens belonging to three species were identified: *Hylurgus ligniperda* (F.), *Pissodes castaneus* (De Geer), and *Tomicus destruens* Woll. We consider all of them xylophagous insects of the maritime pine on Madeira Island, but the small number captured in the traps on Porto Santo suggests that the Aleppo pine is not a preferred host for these xylophagous insects.

The capture locations in Porto Santo for these xylophagous cerambycid and weevil species are shown in Fig. 9 (see end of article).

New records for the Madeira Archipelago

Family **Biphyllidae**

Biphyllus lunatus (Fabricius, 1787)
(Plate I-a) (see end of article)

This is the first record of this family in the Madeira archipelago. According to Jelínek (2007), this Palaearctic species is widely distributed in Europe, from Portugal in the west to Ukraine in the east, and from Greece (Crete) in the south to Norway and Finland in the north. It is also present in North Africa (Morocco, Algeria, and Libya) and India. In Macaronesia, it has already been recorded in the Canary Islands (BIOTA, 2025). This is a new record for Madeira proper. *B. lunatus* feeds on fungi developing on broad-leaved trees (Alexander, 2002), making its association with resinous trees unlikely.

Material studied: Madeira: cFA1613 – 2 spc., ex multi-funnel trap on *Pinus pinaster*, Capela, São Vicente, 32.796333, -17.032112, 290 m, 18 Nov 2014, Florasanto leg.; ICLAM05447 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Prazeres, Calheta, 32.758157, -17.199308, 672 m, 6 Apr 2015, Florasanto leg.

Family **Buprestidae**

Buprestis novemmaculata ssp. ***novemmaculata***
Linnaeus, 1767 (Plate I-b) (see end of article)

This is the first record of the genus *Buprestis* Linnaeus for the Madeira archipelago. *B. novemmaculata s. str.*, the "nine-spotted jewel beetle", according to Kubáň (2016a), is a Palaearctic species widely distributed from the Iberian Peninsula to Asia as far as Kyrgyzstan, and from northern Europe to North Africa (Algeria, Morocco, Tunisia). It also appears to have been introduced into the Afrotropical and Neotropical regions. In Macaronesia, the Azorean Biodiversity Portal, PBA (2025), reports its presence on Santa Maria Island. Although Kubáň (2016) includes the Canary Islands in its distribution, there is no information on its presence in these islands in BIOTA (2025), the Canarian Biodiversity Data Base. A recent observation of a specimen in Gran Canaria (Observation.org, 2025) is based on a photograph, without a voucher specimen for confirmation, and, probably, it is actually a specimen of a very similar species, the endemic *Buprestis bertheloti* Laporte & Gory, 1837, which also occurs in the pine forests of Gran Canaria. This is a new record for Madeira Island. This species is a secondary xylophage whose larvae bore into the trunks and branches of stressed or dead trees, while the adults feed on the foliage, particularly of *Pinus*, *Picea* and *Larix* species (GBIF Secretariat, 2023c).

Material studied: Madeira: ICLAM05812 – 1♂, ex multi-funnel trap on *Pinus pinaster*, Campanário, Ribeira Brava, 32.693643, -17.030315, 743 m, 2 Jul 2015, Florasanto leg.; cFA1622 – 1♂, ex multi-funnel trap on *Pinus pinaster*, Campanário, Ribeira Brava, 32.693068, -17.031315, 721 m, 24 Jul 2015, DRFCN leg.; cFA1751 – 1♀, ex multi-funnel trap on *Pinus pinaster*, Campanário, Ribeira Brava, 32.693329, -17.030766, 736 m, 27 Aug 2015, DRFCN leg.; ICLAM05813 – 1♀, ex multi-funnel trap on *Pinus pinaster*, Campanário, Ribeira Brava, 32.693068, -17.031315, 721 m, 4 Sep 2015, DRFCN leg.; ICLAM06574 – 1♂, ex multi-funnel trap on *Pinus pinaster*, Pomar de Dom João, Ponta do Sol, 32.707202, -17.097417, 663 m, 29 Aug 2017, Natália Nunes leg.; cMMA, 2 spc., in leaves of *Pinus pinaster*, Parque Ecológico do Funchal, Funchal, 1470 m, 32.706053, -16.906857, 13 Jul 2017, Isamberto Silva leg.; cMMA, 1 spc., dead on the ground, Virtudes, São Martinho, Funchal, 135 m, 32.651550, -16.928671, 15 Oct 2021, Miguel M. Andrade leg.

Chalcophora massiliensis (Villers, 1789)
(Plate I-c) (see end of article)

Another introduced wood-boring species, probably originating from the Iberian Peninsula in infested pine wood. According to Kubáň (2016b), this species has a West Palaearctic distribution, extending from Portugal, Spain (including the Balearic Islands), France, and Italy (including Sicily), to North Africa (Algeria, Morocco, and Tunisia). In Macaronesia, Kubáň (2016b) includes the Canary Islands in its distribution, although it is absent from the Canarian Biodiversity Data Base (BIOTA, 2025). This is a new record for Madeira Island. It is a secondary xylophagous species whose larvae bore into dead or weakened conifer wood, primarily in the trunks, stumps, and roots of *Pinus* spp. (Curletti, 1994).

Material studied: Madeira: ICLAM06464 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Prazeres, Calheta, 32.751169, -17.206265, 630 m, 21 Jun 2017, Natália Nunes leg.; cFA1827 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Prazeres, Calheta, 32.749871, -17.202850, 656 m, 29 Aug 2017, Natália Nunes leg.; cMMA, 1 spc., collected in flight,

Raposeira do Lugarinho, Fajã da Ovelha, Calheta, 605 m, 32.761549, -17.054782, 8 Mar 2020, Miguel M. Andrade leg.; ICLAM09576 – 2 spc., ex multi-funnel trap on *Pinus pinaster*, Estreito da Calheta, Calheta, 32.748176, -17.191656, 575 m, 29 Jul 2024, Natália Nunes leg.; cFA1982 – 2 spc., same data as previous.

Phaenops cyanea Fabricius, 1775
(Plate I-d) (see end of article)

Commonly known as the "steel-blue jewel beetle", *P. cyanea* is a Palaearctic species which, according to Kubáň (2016a), has an extensive distribution in Europe, from Portugal in the west, to Ukraine in the east, and from Norway and Finland in the north to the Mediterranean coast in the south; North Africa (Algeria, Morocco); and Asia (Syria, Türkiye, Mongolia, Russia). It is a new record for Madeira and for Macaronesia. In its native range, it is a secondary xylophagous found in coniferous forests, especially those of *Pinus sylvestris*, but can also attack other *Pinus* species as well as species of *Picea*, *Abies* and *Larix* (Curletti, 1994). It prefers weakened, sun-exposed trees, on which the larvae bore galleries in the phloem and cambium, later penetrating the sapwood (Kolk & Starzyk, 1996). There is no evidence that this species has established itself in Madeira, as no additional specimens have been observed or collected.

Material studied: Madeira: cFA1621 – 1♂, ex multi-funnel trap on *Pinus pinaster*, Prazeres, Calheta, 32.749988, -17.201828, 643 m, 29 Jun 2015, Florasanto leg.

Family **Cerambycidae**

Rhagium inquisitor (Linnaeus, 1758)
(Plate I-e) (see end of article)

This is a typical species of coniferous woodland, native to and widely distributed in Europe and beyond, throughout the Palaearctic and Nearctic regions (Sama & Löbl, 2010). It is also a newly recorded species for Madeira and Macaronesia. Although it shows a preference for conifers, this long-horned beetle also develops in stumps and logs of *Quercus* and *Betula* spp. (Alexander, 2002).

Material studied: Madeira: ICLAM05105 – 1♀, ex multi-funnel trap on *Pinus pinaster*, Quinta do Palheiro, Funchal, 32.660305, -16.864519, 590 m, 30 Apr 2015, Florasanto leg.; cFA1892 – 1♂, 1♀, ex multi-funnel trap on *Pinus pinaster*, Parque Ecológico do Funchal, 32.699167, -16.904717, 1159 m, 29 Mar 2023, IFCN leg.

Family **Clambidae**

Clambus simsoni Blackburn, 1902
(Plate I-f) (see end of article)

A detritivorous species that prefers woodland, forest habitats, and other wooded areas. Its native range is Australia and New Zealand (Australasian), but it has been introduced to Europe (Portugal, Spain, France, Austria, Belgium, Germany, the Netherlands, Sweden, Denmark, Poland, Great Britain) and North America (USA, Canada) (Löbl, 2016; GBIF Secretariat, 2023a). *C. simsoni* is a new record for Madeira and Macaronesia.

Material studied: Madeira: ICLAM04951 – 2 spc., ex multi-funnel trap on *Pinus pinaster*, Jardim da Serra, Câmara de Lobos, 32.683025, -17.007573, 916 m, 7 Nov 2014, Florasanto leg.; ICLAM04991 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Santo da Serra, Machico, 32.738238, -16.835686, 688 m, 11 Nov 2014, Florasanto leg.; ICLAM05076 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Fajã da Ovelha, Calheta, 32.780657, -17.227361, 703 m, 30 Mar 2015, Florasanto leg.; ICLAM05080 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Fajã da Ovelha, Calheta, 32.781648, -17.225912, 725 m, 30 Mar 2015, Florasanto leg.; ICLAM05391 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Prazeres, Calheta, 32.749871, -17.202850, 656 m, 30 Mar 2015, Florasanto leg.; ICLAM05433 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Jardim da Serra, Câmara de Lobos, 32.701469, -16.992221, 996 m, 1 Apr 2015, Florasanto leg.; cFA1663 – 4 spc., same data as previous; cFA1650 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Quinta do Palheiro, Funchal, 32.660456, -16.864693, 597 m, 2 Apr 2015, Florasanto leg.; ICLAM05595 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Prazeres, Calheta, 32.750136, -17.202099, 648 m, 30 Apr 2015, Florasanto leg.; ICLAM05749 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, Quinta do Palheiro, Funchal, 32.660456, -16.864693, 597 m, 7 May 2015, Florasanto leg.; ICLAM05301 – 1 spc., ex multi-funnel trap on *Pinus pinaster*, São Vicente, 32.780827, -17.048392, 534 m, 19 May 2015, Florasanto leg.

Family **Cleridae**

Thanasimus formicarius (Linnaeus, 1758)
(Plate I-g) (see end of article)

T. formicarius has a wide distribution in Europe, including Portugal and Spain; North Africa (Morocco and Tunisia); and Asia (Russia, Mongolia, and China), and

has been introduced in the USA (Löbl *et al*., 2007; GBIF Secretariat, 2023b). *T. formicarius* is newly recorded for Madeira and Macaronesia. This species is an oligophagous nocturnal predator, both as a larva and as an adult, in its forest habitat, preying especially on bark beetle larvae in hard, dead timber (Alexander, 2002), particularly those of *Orthotomicus* and *Tomicus* species and others (Wegensteiner *et al*., 2015), and preferably on emerging adults of *Pissodes castaneus* rather than on eggs or larvae (Wolski & Skrecz, 2022).

Material studied: Madeira: ICLAM04466 – 1 spc., ex *Agapanthus praecox*, Levada Prazeres to Raposeira, Fajã da Ovelha, 32.762912, -17.199867, 653 m, 13 Feb 2014, José Jesus leg.; ICLAM04679 – 1♂, ex multi-funnel trap, Ribeirinha, Camacha, 32.673038, -16.847521, 650 m, 15 Jul 2014, Margarida Correia leg.; ICLAM04979 – 1 spc., ex multi-funnel trap, São Paulo, Ribeira Brava, 32.693408, -17.030331, 735 m, 6 Nov 2014, Florasanto leg.; ICLAM04904 – 2 spc., ex multi-funnel trap, São Lourenço, Fajã da Ovelha, 32.780364, -17.227119, 699 m, 7 Nov 2014, Florasanto leg.; cFA1754 – 1 spc., same data as previous; ICLAM04905 – 1 spc., ex multi-funnel trap, São Lourenço, Fajã da Ovelha, 32.781753, -17.226086, 727 m, 7 Nov 2014, Florasanto leg.; ICLAM04906 – 1 spc., ex multi-funnel trap, Vereda do Pico, Prazeres, Calheta, 32.757692, -17.213427, 589 m, 7 Nov 2014, Florasanto leg.; ICLAM04907 – 4 spc., ex multi-funnel trap, Picos, Prazeres, Calheta, 32.750483, -17.201862, 646 m, 7 Nov 2014, Florasanto leg.; ICLAM04908 – 1 spc., ex multi-funnel trap, Caminho da Partilha, Jardim da Serra, Câmara de Lobos, 32.683049, -17.007755, 909 m, 7 Nov 2014, Florasanto leg.; ICLAM04909 – 1 spc., ex multi-funnel trap, Viúva, Quinta Grande, Câmara de Lobos, 32.668706, -16.998936, 632 m, 7 Nov 2014, Florasanto leg.; ICLAM05280 – 1 spc., ex multi-funnel trap, Vereda do Pico, Prazeres, Calheta, 32.758682, -17.211488, 612 m, 18 May 2015, Florasanto leg.

Family **Curculionidae**

Crypturgus pusillus (Gyllenhal, 1813)
(Plate II-a) (see end of article)

This bark beetle species has a wide Palaearctic distribution, including Europe, from the Iberian Peninsula to Ukraine and from the southern European countries bordering the Mediterranean to northern Norway, Sweden and Finland; North Africa (Morocco, Algeria, Libya, Tunisia, Egypt); and Asia, from Türkiye to Japan and Korea. It has been introduced in North America (USA and Canada) (Knížek, 2011). *C. pusillus* is a new record for the Madeira archipelago and Macaronesia. All *Crypturgus* species establish themselves on weakened or dying trees, preferably those already infested by other Scolytinae genera such as *Orthotomicus* and *Tomicus*, and use their entry holes and galleries to begin and construct their own (Plaza, 1983). Wolski & Skrecz (2022) state that *C. pusillus* adults may feed on the eggs or young larvae of Scolytinae, Cerambycidae, Curculionidae and Buprestidae.

Material studied: Madeira: ICLAM05693 – 1 spc., ex multi-funnel trap, Picos, Prazeres, Calheta, 32.749988, -17.201828, 643 m, 15 Jun 2015, Florasanto leg.; ICLAM05709 – 1 spc., ex multi-funnel trap, São Lourenço, Prazeres, Calheta, 32.781470, -17.225769, 725 m, 22 Jun 2015, Florasanto leg.; ICLAM05730 – 1 spc., ex multi-funnel trap, Estrada do Campo de Golfe, Santo da Serra, Machico, 32.719975, -16.791462, 585 m, 25 Jun 2015, Florasanto leg.; ICLAM05166 – 1 spc., ex multi-funnel trap, Picos, Prazeres, Calheta, 32.7498050, -17.202987, 655 m, 29 Jun 2015, Florasanto leg.; ICLAM05735 – 1 spc., ex multi-funnel trap, São Lourenço, Prazeres, Calheta, 32.781648, -17.225912, 725 m, 29 Jun 2015, Florasanto leg.; ICLAM05740 – 1 spc., ex multi-funnel trap, Lombo Coelho, Prazeres, Calheta, 32.761542, -17.204792, 656 m, 29 Jun 2015, Florasanto leg.; ICLAM05549 – 2 spc., ex multi-funnel trap, Posto Florestal, Prazeres, Calheta, 32.759171, -17.197551, 679 m, 6 Jul 2015, Florasanto leg.; ICLAM005778 – 1 spc., São Lourenço, Prazeres, Calheta, 32.781182, -17.225751, 719 m, 21 Jul 2015, DRFCN leg.; ICLAM05827 – 1 spc., ex multi-funnel trap, Posto Florestal, Prazeres, Calheta, 32.758509, -17.198282, 677 m, 13 Aug 2015, DRFCN leg.; ICLAM05829 – 1 spc., ex multi-funnel trap, Cortumes, Prazeres, Calheta, 32.761217, -17.193503, 710 m, 13 Aug 2015, DRFCN leg.; ICLAM05552 – 2 spc., ex multi-funnel trap, Corrida, Jardim da Serra, Câmara de Lobos, 32.701496, -16.992222, 998 m, 16 Sep 2015, DRFCN leg.; ICLAM05870 – 1 spc., ex multi-funnel trap, São Paulo, Campanário, Ribeira Brava, 32.693596, -17.030452, 739 m, 16 Sep 2015, DRFCN leg.; ICLAM05537G – 3 spc., (2 slide-mounted), ex multi-funnel trap, Picos, Prazeres, Calheta, 32.749805, -17.202987, 655 m, 25 Sep 2015, Florasanto leg.

Hylastes attenuatus Erichson, 1836

According to Knížek (2011), *H. attenuatus* has a wide distribution, mostly throughout Europe (including the Madeira Archipelago), and extends eastwards to Taiwan and Japan. Erber & Hinterseher (1988) recorded the closely related *H. angustatus* Herbst from Madeira, but Knížek

(2011) does not consider this species to occur in Madeira, which may indicate a misidentification of *H. attenuatus*. In Macaronesia, *H. attenuatus* is also present in the Azores (PBA, 2025).

Material studied: Madeira: ICLAM05074 – 2 spc., ex multi-funnel trap, São Lourenço, Fajã da Ovelha, Calheta, 32.780713, -17.227277, 704 m, 30 Mar 2015, Florasanto leg.; ICLAM05385 – 2 spc., ex multi-funnel trap, Picos, Prazeres, Calheta, 32.750020, -17.202544, 650 m, 30 Mar 2015, Florasanto leg.; ICLAM05162 – 6 spc., ex multi-funnel trap, São Lourenço, Fajã da Ovelha, Calheta, 32.780642, -17.227200, 704 m, 11 May 2015, Florasanto leg.; ICLAM05211 – 2 spc., ex multi-funnel trap, Posto Florestal, Prazeres, Calheta, 32.758955, -17.197535, 683 m, 11 May 2015, Florasanto leg.; ICLAM05216 – 2 spc., ex multi-funnel trap, Posto Florestal, Prazeres, Calheta, 32.759171, -17.197551, 679 m, 11 May 2015, Florasanto leg.; ICLAM05231 – 6 spc., ex multi-funnel trap, Cortumes, Prazeres, Calheta, 32.761560, -17.192977, 705 m, 11 May 2015, Florasanto leg.

Family **Leiodidae**

Agathidium (Cyphoceble) arcticum Thomson, 1862
(Plate II-b) (see end of article)

This species is mainly distributed in Europe (France, Italy, Austria, Hungary, the UK, Norway, Sweden, Finland, Switzerland, Romania, Slovakia), the Russian Federation (northern European territories) and Mongolia (Perreau, 2004). *A. arcticum* is a facultative xylophagous species and has been found on the mycelia and fruiting bodies of various fungi and myxomycetes, primarily on dead wood under bark (Alexander, 2002; Wheeler & Miller, 2005). This is a new record for Madeira and Macaronesia.

Material studied: Madeira: ICLAM05019 – 1 spc., ex multi-funnel trap, Posto Florestal, Prazeres, Calheta, 32.758708, -17.198265, 677 m, 6 Nov 2014, Florasanto leg.; ICLAM05026 – 1 spc., ex multi-funnel trap, São Paulo, Campanário, Ribeira Brava, 32.693678, -17.030390, 733 m, 6 Nov 2014, Florasanto leg.; ICLAM05027 – 1 spc., ex multi-funnel trap, São Paulo, Campanário, Ribeira Brava, 32.693655, -17.030134, 750 m, 6 Nov 2014, Florasanto leg.; ICLAM05035 – 6 spc., ex multi-funnel trap, Quinta Grande, Câmara de Lobos, 32.671062, -17.011197, 772 m, 7 Nov 2014, Florasanto leg.; cFA1617 – 1 spc., ex multi-funnel trap, Caminho da Partilha, Jardim da Serra, Câmara de Lobos, 32.683025, -17.007573, 916 m, 7 Nov 2014, Florasanto leg.; ICLAM05021 – 2 spc., ex multi-funnel trap, Parque Empresarial, São Vicente, 32.780640, -17.047694, 524 m, 10 Nov 2014, Florasanto leg.; cFA1619 – 1 spc., same data as previous, but from 32.780849, -17.048681, 541 m; ICLAM05006 – 1♀, ex multi-funnel trap, Arrebentão, Santo da Serra, Machico, 32.731584, -16.822574, 573 m, 11 Nov 2014, Florasanto leg.; ICLAM05393 – 1 spc., ex multi-funnel trap, Posto Florestal, Prazeres, Calheta, 32.758596, -17.198977, 672 m, 30 Mar 2015, Florasanto leg.; ICLAM05157 – 1 spc., ex multi-funnel trap, Fajã da Ovelha, Calheta, 32.782555, -17.232212, 651 m, 11 May 2015, Florasanto leg.

Leiodes calcarata (Erichson, 1845)
(Plate II-c) (see end of article)

According to Švec (2019), *L. calcarata* is recorded from most of Europe, including Portugal and Spain; it is also present in North Africa (Algeria and Tunisia) and the Middle East (Türkiye). In the Catalogue of Palaearctic Coleoptera, this species is listed under its synonym, *L. polita* Marsham, 1802 (Perreau, 2004). This species is newly recorded for the Madeira archipelago and Macaronesia, although two endemic Leiodes species are known from the Canary Islands (BIOTA, 2025). Its biology is not known, but generally, adults and larvae of members of the Leiodinae feed on fungus fruit bodies, and some European species of *Leiodes* feed on hypogeal fungi (Chandler & Peck, 1992).

Material studied: Madeira: cFA2145 – 1 spc., ex multi-funnel trap, Caminho da Partilha, Jardim da Serra, Câmara de Lobos, 32.683191, -17.007331, 917 m, 15 Apr 2015, Florasanto leg.

Family **Mycetophagidae**

Litargus (Alitargus) balteatus LeConte, 1856
(Plate II-d) (see end of article)

The "stored grain hairy fungus beetle", although a species of Nearctic origin, has a cosmopolitan distribution. Nikitsky (2008) reports its presence in almost all zoogeographical regions, except the Afrotropical and Pacific regions. In Macaronesia, it has already been recorded on all Azorean islands (PBA, 2025) and on more than half of the Canary Islands (BIOTA, 2025). We list this species as a new record, supported by voucher specimen data, although Nikitsky (2008) already included Madeira in its distribution. The same author also added *Litargus pilosus* Wollaston, 1857 as a new synonym of *L. balteatus*. This species occurs in forest ecosystems (under bark, in

leaf litter and fungal fruiting bodies) and in anthropogenic habitats such as stored grain and waste deposits, where adults and larvae feed on fungal tissues and spores (GBIF Secretariat, 2023d).

Material studied: Madeira: ICLAM04970 – 1 spc., ex multi-funnel trap, Capela, São Vicente, 32.796333, -17.032112, 290 m, 18 Nov 2014, Florasanto leg.; ICLAM05336 – 1♀, ex multi-funnel trap, Vacaria Moitada, São Vicente, 32.778353, -17.041396, 554 m, 26 May 2015, Florasanto leg.; ICLAM05707 – 1 spc., ex multi-funnel trap, São Lourenço, Fajã da Ovelha, Calheta, 32.779340, -17.229817, 679 m, 22 Jun 2015, Florasanto leg.; ICLAM05721 – 1 spc., ex multi-funnel trap, Loural, São Vicente, 32.770925, -17.034523, 481 m, 23 Jun 2015, Florasanto leg.; cFA – 1 spc., ex multi-funnel trap, Pomar Dom João, Ponta do Sol, 32.707059, -17.097329, 660 m, 21 Jul 2015, DRFCN leg.

Family **Staphylinidae**

Nudobius collaris (Erichson, 1839)
(Plate II-e) (see end of article)

According to Smetana (2004), this species is found in southern and central Europe, including Portugal, Spain, France, Italy, Greece, Germany, Austria, Ukraine, Türkiye, and North Africa (Algeria and Tunisia). *N. collaris* is newly recorded for the Madeira archipelago and for Macaronesia. However, a congeneric species with a similar habitus occurs in the Canary Islands, *N. canariensis* Israelson, which is endemic to La Palma Island. The genus *Nudobius* Thomson is known for its effective predation on bark beetle larvae in coniferous forests and mixed woodlands (Pietrykowska *et al*., 2019).

Material studied: Madeira: cFA1656 – 1 spc., ex multi-funnel trap, São Paulo, Campanário, Ribeira Brava, 32.693288, -17.031042, 727 m, 1 Apr 2015, Florasanto leg.; cFA1667 – 1 spc., ex multi-funnel trap, Picos, Prazeres, Calheta, 32.750449, -17.201733, 644 m, 6 Apr 2015, Florasanto leg.; ICLAM05450 – 1 spc., ex multi-funnel trap, Quebradas, São Vicente, 32.776877, -17.042857, 564 m, 7 Apr 2015, Florasanto leg.; ICLAM05572 – 1 spc., ex multi-funnel trap, Picos, Prazeres, Calheta, 32.750483, -17.201862, 646 m, 20 Apr 2015, Florasanto leg.; ICLAM05633 – 1 spc., ex multi-funnel trap, same locality as previous, 32.750011, -17.203067, 655 m, 4 May 2015, Florasanto leg.; ICLAM05747 – 2 spc., ex multi-funnel trap, Santo da Serra, Machico, 32.719975, -16.791462, 585 m, 7 May 2015, Florasanto leg.; ICLAM05671 – 1 spc., ex multi-funnel trap, Picos, Prazeres, Calheta, 32.749956, -17.203108, 655 m, 8 Jun 2015, Florasanto leg.; ICLAM05150 – 1 spc., ex multi-funnel trap, same locality as previous, 32.750098, -17.202760, 651 m, 6 Jul 2015, Florasanto leg.; cFA1823 – 1 spc., ex multi-funnel trap, Pomar Dom João, Ponta do Sol, 32.707349, -17.097805, 668 m, 25 Jul 2017, Natália Nunes leg.

Family **Tenebrionidae**

Corticeus (Corticeus) pini (Panzer, 1799)
(Plate II-f) (see end of article)

This species is widely distributed in Europe, from Portugal in the west to the Mediterranean countries, including Spain and Greece, and northwards to Belgium, Germany, Poland, and Estonia. It also extends eastwards to Belarus, Ukraine, and European Russia. It is also found in North Africa (Tunisia) and Asia (Türkiye, Israel, Lebanon, Syria, Russia, Mongolia) (Löbl *et al*., 2008). This species is newly recorded for the Madeira archipelago. In the rest of Macaronesia, it has already been recorded on all the Canary Islands except the eastern, drier islands of Fuerteventura and Lanzarote (BIOTA, 2025). *C. pini* is ecologically associated with pine forests throughout Europe. It is primarily saproxylic, inhabiting decaying conifer wood and bark, often closely associated with the galleries of bark beetles. Adults and larvae are mycophagous and detritivorous, feeding on fungal growth and decaying organic matter within the subcortical environment (GBIF Secretariat, 2023e).

Material studied: Madeira: ICLAM05037 – 1 spc., ex multi-funnel trap, Quinta Grande, Câmara de Lobos, 32.667044, -17.013208, 670 m, 7 Nov 2014, Florasanto leg.; ICLAM05071 – 1 spc., ex multi-funnel trap, São Lourenço, Fajã da Ovelha, Calheta, 32.779617, -17.230078, 672 m, 30 Mar 2015, Florasanto leg.; ICLAM05081 – 1 spc., ex multi-funnel trap, same locality and date as previous, but 32.781648, -17.225912, 725 m, Florasanto leg.; ICLAM05212 – 1 spc., ex multi-funnel trap, Prazeres, Calheta, 32.758955, -17.197535, 683 m, 11 May 2015, Florasanto leg.; ICLAM05251 – 1 spc., ex multi-funnel trap, Loural, São Vicente, 32.770898, -17.034576, 481 m, 12 May 2015, Florasanto leg.; ICLAM05260 – 1 spc., ex multi-funnel trap, Capela, São Vicente, 32.796540, -17.033270, 273 m, 12 May 2015, Florasanto leg.; ICLAM05267 – 1 spc., ex multi-funnel trap, São Paulo, Campanário, Ribeira Brava, 32.693329, -17.030766, 736 m, 13 May 2015, Florasanto leg.; ICLAM05272 – 1 spc., ex multi-funnel trap, São Lourenço, Fajã da Ovelha, Calheta, 32.780713, -17.227277, 704 m, 18 May 2015, Florasanto leg.; ICLAM05275 – 1

spc., ex multi-funnel trap, same locality as previous, but 32.781648, -17.225912, 725 m, 18 May 2015, Florasanto leg.; ICLAM05281 – 1 spc., ex multi-funnel trap, Lombo Coelho, Prazeres, Calheta, 32.761602, -17.204953, 655 m, 18 May 2015, Florasanto leg.; ICLAM05284 – 1 spc., ex multi-funnel trap, Picos, Prazeres, Calheta, 32.750081, -17.202652, 650 m, 18 May 2015, Florasanto leg.; ICLAM05287 – 1 spc., ex multi-funnel trap, same locality as previous, but 32.750098, -17.202760, 651 m, 18 May 2015, Florasanto leg.; ICLAM05288 – 1 spc., ex multi-funnel trap, same locality as previous, but 32.749508, -17.202959, 653 m, 18 May 2015, Florasanto leg.; ICLAM05293 – 1 spc., ex multi-funnel trap, Prazeres, Calheta, 32.758567, -17.198027, 684 m, 18 May 2015, Florasanto leg.; ICLAM05298 – 1 spc., ex multi-funnel trap, same locality as previous, but 32.758509, -17.198282, 677 m, 18 May 2015, Florasanto leg.; cFA1632 – 1 spc., ex multi-funnel trap, Loural, São Vicente, 32.771348, -17.032964, 464 m, 19 May 2015, Florasanto leg.; ICLAM05313 – 1 spc., ex multi-funnel trap, Viúva, Quinta Grande, Câmara de Lobos, 32.668808, -16.999855, 628 m, 20 May 2015, Florasanto leg.; ICLAM05338 – 1 spc., ex multi-funnel trap, Vacaria Moitada, São Vicente, 32.778353, -17.041396, 544 m, 26 May 2015, Florasanto leg.; ICLAM05360 – 1 spc., ex multi-funnel trap, São Lourenço, Fajã da Ovelha, Calheta, 32.781182, -17.225751, 719 m, 1 Jun 2015, Florasanto leg.; cFA1710 – 2 spc., ex multi-funnel trap, Pomar Dom João, Ponta do Sol, 32.707202, -17.097417, 663 m, 8 Jun 2015, Forasanto leg.; ICLAM05560 – 1 spc., ex multi-funnel trap, Quebradas, São Vicente, 32.776877, -17.042857, 564 m, 30 Jun 2015, Florasanto leg.; cFA1759 – 1 spc., ex multi-funnel trap, São Paulo, Campanário, Ribeira Brava, 32.693689, -17.030252, 745 m, 7 Aug 2015, DRFCN leg.

Pentaphyllus testaceus (Hellwig, 1792)
(Plate II-g) (see end of article)

According to Löbl *et al*. (2008), this species is widely distributed in Europe, from the southwestern Mediterranean countries of Spain, France, and Italy, to northern Europe, including Denmark, Sweden, and Finland, and eastwards as far as Russia (European territories). It is also present in North Africa (Algeria and Tunisia) and Asia (Tajikistan). *P. testaceus* is newly recorded for the Madeira archipelago and Macaronesia. *P. testaceus* appears to be associated with decaying bracket fungi (Polyporales), mainly on decaying timber of broad-leaved trees (Alexander, 2002).

Material studied: Madeira: ICLAM05679 – 1 spc., ex multi-funnel trap, Prazeres, Calheta, 32.758707, -17.198265, 677 m, 8 Jun 2015, Florasanto leg.; cFA1742 – 1 spc., ex multi-funnel trap, Corrida, Jardim da Serra, Câmara de Lobos, 32.701469, -16.992221, 996 m, 8 Jul 2015, Florasanto leg.

New records for Porto Santo Island

Family **Cerambycidae**

Monochamus galloprovincialis (Olivier, 1795)

This species, known on Madeira Island since the early 1990s (Erber & Aguiar, 1996), is here reported as a new record for Porto Santo. However, no voucher specimen is available, as the only specimen captured to date was macerated and destroyed to confirm whether it carried the pine wood nematode, *Bursaphelenchus xylophilus* (Steiner & Bührer) Nickle. Since this collection eight years ago, no further specimens have been detected in Porto Santo, although the trap system remains active, suggesting that it was an isolated, chance introduction.

Material studied: Porto Santo: 1♂, ex multi-funnel trap, Pico do Castelo, 33.081562, -16.332994, 354 m, 28 Sep 2017, Natália Nunes leg.

Oxypleurus nodieri Mulsant, 1839

Known in Madeira since the mid-nineteenth century (Wollaston, 1857). The larvae develop on dead trunks of diverse *Pinus* species (Teocchi, 1975; Trócoli, 2018). This is a new record for Porto Santo Island.

Material studied: Porto Santo: ICLAM05089 – 1♀, ex multi-funnel trap, Serra de Fora, 33.092456, -16.316972, 220 m, 28 May 2015, Florasanto leg.; ICLAM05092 – 1♀, ex multi-funnel trap, Pico Ana Ferreira, 33.043367, -16.373609, 97 m, 28 May 2015, Florasanto leg.; ICLAM05093 – 1♂, 3♀, ex multi-funnel trap, Pico Ana Ferreira, 33.044370, -16.372585, 139 m, 28 May 2015, Florasanto leg.; ICLAM05094 – 2♂, 2♀, ex multi-funnel trap, Ponta, 33.034053, -16.388787, 114 m, 28 May 2015, Florasanto leg.

Trichoferus fasciculatus ssp. ***senex*** (Wollaston, 1854)

Although described as a new species from Madeira by Wollaston (1854), this subspecies is also present in the Canary Islands, being Central Macaronesian in distribution (Sama & Löbl, 2010). It is a new record for Porto Santo Island.

Material studied: Porto Santo: ICLAM06530 and 06532 – 2♀, 2♂, ex multi-funnel trap, Morenos, 33.039109,

-16.387389, 111 m, 2 Aug 2017, Natália Nunes leg.; cFA1824 – 2♂, 1♀, same data as previous; ICLAM06531 – 2♂, ex multi-funnel trap, same data as previous, but 11 Aug 2017; ICLAM06534 – 1♀, ex multi-funnel trap, Pico Ana Ferreira, 33.043367, -16.373609, 97 m, 2 Aug 2017, Natália Nunes leg.; ICLAM06529 and 06533 – 1♂, 1♀, ex multi-funnel trap, Pico Ana Ferreira, 33.044370, -16.372585, 139 m, 11 Aug 2017, Natália Nunes leg.

Family **Curculionidae**

Hylurgus ligniperda (Fabricius, 1787)

In Madeira, this is the most frequent barkbeetle retrieved from the multi-funnel traps, but it was so far unknown in Porto Santo. *H. ligniperda* is a new record for Porto Santo Island.

Material studied: Porto Santo: ICLAM06540 – 2 spc., ex multi-funnel trap, Pico do Castelo, 33.081562, -16.332994, 354 m, 11 Aug 2017, Natália Nunes leg.

Tomicus destruens (Wollaston, 1865)

Although described as a new species from Madeira by Wollaston (1865), it has a wider distribution, encompassing Portugal, Spain, France, Italy, Greece, Croatia, and further east, Cyprus, Israel, Türkiye, Ukraine, the southern European territories of Russia and Algeria in North Africa (Knížek, 2011). *T. destruens* is a new record for Porto Santo Island.

Material studied: Porto Santo: ICLAM01352 – 1 spc., ex *Pinus halepensis*, Pedreira, Serra de Dentro, 33.082462, -16.297154, 53 m, 23 Feb 2007, Natália Nunes leg.; ICLAM04073 – 1 spc., ex *Pinus pinea*, Porto Santo, 10 May 2013, DRFCN leg.; ICLAM06572 – 1 spc., ex multi-funnel trap, Pico Ana Ferreira, 33.043367, -16.373609, 97 m, 31 Aug 2017, Natália Nunes leg.; ICLAM09235 – 6 spc., ex *Pinus halepensis*, Ribeiro da Pedra Branca, 16 Mar 2022, Natália Nunes leg.

REFERENCES

ALONZO-ZARAZAGA, M. A.:

2013. Molytinae, pp. 475-496. In: I. Löbl & A. Smetana (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 8. – Curculionoidea II*. Brill, Leiden / Boston, 700 pp.

ALEXANDER, K. N. A.:

2002. *The invertebrates of living and decaying timber in Britain & Ireland – A provisional annotated checklist*. English Nature Research Reports, Number 467, 142 pp.

BIOTA:

2025. Banco de Datos de Biodiversidad de Canarias. Gobierno de Canarias. https://www.biodiversidadcanarias.es/biota/ [Accessed: 06/11/2025].

CHANDLER, D. S. & S. B. PECK:

1992. Diversity and seasonality of Leiodid beetles (Coleoptera: Leiodidae) in an old-growth and a 40-year-old forest in New Hampshire. *Environmental Entomology*, **21** (6): 1283-1293.

CURLETTI, G.:

1994. I Buprestidi D'Italia – Catalogo Tassonomico, Sinonimico, Biologico, Geonemico. Museo Civico di Scienze Naturali di Brescia. *Monografie di Natura Bresciana*, **19**, 318 pp.

ERBER, D. & A. M. FRANQUINHO AGUIAR:

1996. New and remarkable species of the coleopterous fauna of Madeira. *Boletim do Museu Municipal do Funchal*, **48** (265): 41-62.

ERBER, D. & W. HINTERSEHER:

1988. Contribution to the knowledge of the Madeira beetles. *Boletim do Museu Municipal do Funchal*, **40** (202): 139-214.

FACCOLI, M.:

2007. Breeding performance and longevity of T*omicus destruens* on Mediterranean and continental pine species. *Entomologia Experimentalis et Applicata*, **123** (3): 263-269. https://doi.org/10.1111/j.1570-7458.2007.00557.x

GBIF SECRETARIAT:

2023a. *Clambus simsoni* Blackburn, 1902 in GBIF Secretariat (2023). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei [Accessed via GBIF.org on 2025-11-07].

2023b. *Thanasimus formicarius* (Linnaeus, 1758) in GBIF Secretariat (2023). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei [Accessed via GBIF.org on 2025-11-07].

2023c. *Buprestis novemmaculata* Linnaeus, 1767 in GBIF Secretariat (2023). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei [Accessed via GBIF.org on 2025-11-26].

2023d. *Litargus balteatus* Le Conte, 1856 in GBIF Secretariat (2023). GBIF Backbone Taxonomy. Checklist

dataset https://doi.org/10.15468/39omei [Accessed via GBIF.org on 2025-11-27].

2023e. *Corticeus pini* (Panzer, 1799) in GBIF Secretariat (2023). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei [Accessed via GBIF.org on 2025-11-27].

IFRAM2:

2015. 2.º Inventário Florestal da Região Autónoma da Madeira, Relatório Final. DRFCN, 188 pp.

JELÍNEK, J.:

2007. Biphyllidae, pp. 547-548. In: I. Löbl & A. Smetana (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 4. – Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea, Cucujoidea*. Apollo Books, Stenstrup, 935 pp.

KNÍŽEK, M.:

2011. Scolytinae, pp. 204-251. I. Löbl & A. Smetana (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 7. – Curculionoidea I*. Apollo Books, Stenstrup, 373 pp.

KOLK, A. & J. R. STARZYK:

1996. *The Atlas of Forest Insect Pests*. The Polish Forest Research Institute. Multico Warsawa, 705 pp.

KUBÁŇ, V.:

2016a. Buprestinae, pp. 494-523. In: I. Löbl & D. Löbl (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 3. – Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea, Byrrhoidea. Revised and Updated Edition*. Brill, Leiden / Boston, xxii + 983 pp.

KUBÁŇ, V.:

2016b. Chrysochroinae, pp. 456-493. In: I. Löbl & D. Löbl (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 3. – Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea, Byrrhoidea. Revised and Updated Edition*. Brill, Leiden / Boston, xxii + 983 pp.

LÖBL, I.:

2016. Clambidae, pp. 426-428. In: I. Löbl & D. Löbl (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 3. – Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea, Byrrhoidea. Revised and Updated Edition*. Brill, Leiden / Boston, xxii + 983 pp.

LÖBL, I., J. ROLČÍK, J. KOLIBAC & R. GERSTMEIER:

2007. Cleridae, pp. 367-384. In: I. Löbl & A. Smetana (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 4. – Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea, Cucujoidea*. Apollo Books, Stenstrup, 935 pp.

LÖBL, I., O. MERKL, K. ANDO, P. BOUCHARD, M. LILLIG, K. MASOMUTO & W. SCHAWALLER:

2008. Tenebrionidae, pp. 105-352. In: I. Löbl & A. Smetana (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 5. – Tenebrionoidea*. Apollo Books, Stenstrup, 670 pp.

NIKITSKY, N. B.:

2008. Mycetophagidae, pp. 51-55. In: I. Löbl & A. Smetana (eds.) *Catalogue of Palaearctic Coleoptera, Vol. 5. – Tenebrionoidea*. Apollo Books, Stenstrup, 670 pp.

OBSERVATION.ORG:

2025. Observation.org, Nature data from around the World.
Occurrence dataset https://doi.org/10.15468/5nilie accessed via GBIF.org on 2025-11-06.
https://www.gbif.org/occurrence/4957885544

PBA:

2025. Portal da Biodiversidade dos Açores.
https://azoresbioportal.uac.pt/pt/
[Accessed: 06/11/2025].

PERREAU, M.:

2004. Leiodidae, pp. 133-203. In I. Löbl & A. Smetana (eds.): *Catalogue of Palaearctic Coleoptera, Vol. 2. – Hydrophyloidea, Histeroidea, Staphylinoidea*. Apolo Books, Stenstrup, 942 pp.

PIETRYKOWSKA-TUDRUJ, E., B. STANIEC, G. K. WAGNER & M. ZAGAJA:

2019. Re-descriptions of larvae of mature larvae of two predatory species of *Nudobius* and *Gabrius* associated with bark beetle galleries (Coleoptera: Staphylinidae). *Zootaxa*, **4674** (5):581-599.
https://doi.org/10.11646/zootaxa.4674.5.7

PLAZA, E.:

1983. Los representantes españoles de las tribus *Crypturgini* y *Pityophthorini* (Coleoptera, Scolytidae). *Eos*, **59**: 223-241.

SAMA, G. & I. LÖBL:

2010. Cerambycidae, pp. 132-139. In I. Löbl & A. Smetana (eds.): *Catalogue of Palaearctic Coleoptera, Vol. 6. – Chrysomeloidea*. Apolo Books, Stenstrup, 924 pp.

SERRANO, A. R. M.:

1988. Contribution à la connaissance des coléoptères de l'Archipel de Madère. II. Coleoptera: Cerambycidae. *Boletim do Museu Municipal do Funchal*, **40** (204): 235-238.

SMETANA, A.:

2004. Staphylininae, pp. 624-698. In I. Löbl & A. Smetana (eds.): *Catalogue of Palaearctic Coleoptera, Vol. 2. – Hydrophyloidea, Histeroidea, Staphylinoidea*. Apolo Books, Stenstrup, 942 pp.

STÜBEN, P. E.:

2017. Die Curculionoidea (Coleoptera) von den Inseln Madeiras und den Selvagens. *Snudebiller*, **18** (261): 1-92.

ŠVEC, Z.:

2019. Two new European species of the genus *Leiodes* Latreille, 1796 (Coleoptera: Leiodidae: Leiodinae). *Studies and Reports – Taxonomical Series*, **15** (1): 243-250.

TEOCCHI, P.:

1975. Les points obscurs de la bionomie d'*Oxypleurus nodieri* [Col. Cerambycidae Aseminae]. *L'Entomologiste*, **31** (4-5): 149-153.

TRÓCOLI, S.:

2018. Actualización del catálogo de Longicornios de

Marruecos (Parte I: Prioninae, Aseminae, Saphaninae). *Revue de l'Association Roussillonnaise d'Entomologie*, **27** (3): 130-140.

VASCONCELOS, T., N. NAZARÉ M. BRANCO, C. KERDELHUE, D. SAUVARD & F. LIEUTIER:

2003. Host preference of *Tomicus piniperda* and *Tomicus destruens* for three Pine species. *Proccedings: IUFRO Kanazawa 2003 "Forest Insect Population Dynamics and Host Influences"*, 19-21.

WHEELER, Q. D. & K. B. MILLER:

2005. Slime-mold beetles of the genus *Agathidium* Panzer in North and Central America: Coleoptera, Leiodidae. Part 1. *Bulletin of the American Museum of Natural History*, no. **290**: 1-95.

WEGENSTEINER, R., B. WERMELINGER & M. HERRMANN:

2015. Natural enemies of bark beetles: predators, parasitoids, pathogens and nematodes, pp. 247-289. In F. E. Vega & R. W. Hofstetter (eds.): *Bark Beetles – Biology and ecology of native and invasive species*. Academic Press, Elsevier, 620 pp.

WOLLASTON, T. V.:

1854. *Insecta maderensia; being an account of the insects of the islands of the Madeiran group*. J. Van Voorst, London, xliii+634 pp., pl 1-13.

1857. *Catalogue of the Coleopterous insects of Madeira in the collection of the British Museum*. Taylor & Francis, London, xvi+234 pp.

1865. *Coleoptera Atlantidum, being an enumeration of the Coleopterous of the Madeiras, Salvages and Canaries*. Taylor & Francis, London, xlvii+526 pp + Appendix 140 pp.

WOLSKI, R. & I. SKRZECZ:

2022. Insect assemblages associated with *Pissodes castaneus* (De Geer) on *Pinus sylvestris* L. trees. Sylwan, 166 (2): 91-100. https://doi.org/10.26202/sylwan.2022008.

Table 1 – List of Coleoptera families present in the studied material, ordered by number of specimens captured / collected.

Family	N.º Specimens	%
Cerambycidae	5366	45,16
Curculionidae	2441	20,55
Cleridae	1465	12,33
Monotomidae	686	5,77
Throscidae	543	4,57
Tenebrionidae	182	1,53
Staphylinidae	145	1,22
Histeridae	141	1,19
Laemophloeidae	130	1,09
Carabidae	122	1,03
Latridiidae	120	1,01
Anobiidae	106	0,89
Ciidae	104	0,88
Mycetophagidae	53	0,45
Cryptophagidae	43	0,36
Scraptiidae	34	0,29
Corylophidae	21	0,18
Leiodidae	19	0,16
Coccinellidae	18	0,15
Ptinidae	16	0,13
Nitidulidae	15	0,13
Clambidae	14	0,12
Silvanidae	11	0,09
Bostrichidae	10	0,08
Chrysomelidae	10	0,08
Salpingidae	10	0,08
Hydrophilidae	9	0,08
Endomychidae	8	0,07
Buprestidae	7	0,06
Phalacridae	6	0,05
Ptiliidae	6	0,05
Aphodiidae	4	0,03
Apionidae	4	0,03
Dermestidae	3	0,03
Lyctidae	3	0,03
Biphyllidae	2	0,02
Oedemeridae	2	0,02
Anthicidae	1	0,01
Dryopidae	1	0,01
Total	**11881**	**100%**

Table 2 – List of identified taxa ordered by families, with information on their colonisation status and feeding habits.

Family / Species	Origin	Feeding habits
Anobiidae		
Anobium punctatum (De Geer, 1774)	Introduced	Xylophagous, feeds on dead trees, under the bark on sapwood
Ernobius mollis mollis (Linnaeus, 1758)	Introduced	Xylophagous, feeds on dead trees, under the bark on sapwood
Nicobium castaneum (Olivier, 1790)	Introduced	Xylophagous and polyphagous; prefer living indoors
Ptilinus pectinicornis (Linnaeus, 1758)	Introduced	Xylophagous on deciduous deadwood
Anthicidae		
Stricticollis tobias De Marseul, 1879	Introduced	Saprophagous in plant residues and organic matter
Aphodiidae		
Aphodius fimetarius (Linnaeus, 1758)	Native	Coprophagous; on cow dung
Aphodius granarius (Linnaeus, 1767)	Native	Coprophagous; on cow dung
Apionidae		
Exapion uliciperda (Pandellé, 1867)	Introduced	Phytophagous on Ulex europaeus [Fabaceae]
Malvapion malvae (Fabricius, 1775)	Native	Phytophagous on Malvaceae
Biphyllidae		
Biphyllus lunatus (Fabricius, 1787) **NRM**	Introduced	Mycophagous, under the bark of deciduous trees
Bostrichidae		
Scobicia barbata (Wollaston, 1860)	Introduced	Xylophagous on dead wood; Phytophagous
Buprestidae		
Buprestis novemmaculata s. str. Linnaeus, 1767 **NRM**	Introduced	Xylophagous on dead or dying trunks of Pinus, Picea and Larix conifers
Chalcophora massiliensis (Villers, 1789) **NRM**	Introduced	Xylophagous on dead or dying trunks of Pinus spp.
Phaenops cyanea Fabricius, 1775 **NRM**	Introduced	Xylophagous on dead or dying trunks of Pinus, Abies, Picea and Larix conifers
Carabidae		
Amara aenea (De Geer, 1774)	Introduced	Predator of small invertebrates/arthropods or detritivorous
Dromius angustus alutaceus Wollaston, 1857	Endemic	Predator of small invertebrates/arthropods under the bark
Harpalus distinguendus s. str. (Duftschmid, 1812)	Native	Predator of small invertebrates/arthropods or detritivorous
Harpalus tenebrosus Dejean, 1829	Native	Predator of small invertebrates/arthropods or detritivorous
Microlestes negrita (Wollaston, 1854)	Native	Predator of small invertebrates/arthropods or detritivorous
Ocys harpaloides (Audinet-Serville, 1821)	Native	Predator of small invertebrates/arthropods under the bark
Philorhizus sp.	?Endemic	Predator of small invertebrates/arthropods under the bark
Cerambycidae		
Arhopalus ferus (Mulsant, 1839)	Introduced	Xylophagous on dead or burned Pinus spp.
Arhopalus rusticus (Linnaeus, 1758)	Introduced	Xylophagous on dead or burned Pinus spp.
Arhopalus syriacus (Reitter, 1895)	Introduced	Xylophagous on dead or burned Pinus spp.
Clytus arietis (Linnaeus, 1758)	Introduced	Xylophagous on dead deciduous trees; occasionally on conifers
Hylotrupes bajulus (Linnaeus, 1758)	Introduced	Xylophagous on dead wood of Pinus or Picea, mainly used in construction
Monochamus galloprovinciallis (Olivier, 1795) **NRPS**	Introduced	Xylophagous on dead or burned Pinus spp.
Oxypleurus nodieri Mulsant, 1839 **NRPS**	Introduced	Xylophagous on dead branches of Pinus spp.
Phoracantha semipunctata (Fabricius, 1775)	Introduced	Xylophagous on Eucalyptus spp.
Phymatodes testaceus (Linnaeus, 1758)	Introduced	Xylophagous on dead or dying deciduous trees
Rhagium inquisitor (Linnaeus, 1758) **NRM**	Introduced	Xylophagous and polyphagous; prefers conifers, but also on deciduous trees
Trichoferus fasciculatus senex (Wollaston, 1854) **NRPS**	Native	Xylophagous and polyphagous on deciduous trees
Chrysomelidae		
Bruchus sp.	?	Phytophagous on seeds and seed-pods
Chrysolina bankii (Fabricius, 1775)	Native	Phytophagous on herbaceous plants
Chrysolina hyperici (Forster, 1771)	Native	Phytophagous on herbaceous plants
Ciidae		
Cis sp. 1	?	Mycophagous on Poliporaceae
Cis sp. 2	?	Mycophagous on Poliporaceae
Clambidae		
Clambus simsoni Blackburn, 1902 **NRM**	Introduced	Mycophagous
Cleridae		
Thanasimus formicarius (Linnaeus, 1758) **NRM**	Introduced	Predator of bark-beetle larvae on conifers
Coccinellidae		
Coccinella algerica Kovár, 1977	Native	Predator of Aphidoidea
Harmonia quadripunctata (Pontoppidan, 1763)	?	Predator of Sternorhyncha, also on conifers
Hippodamia variegata (Goeze, 1777)	Native	Predator of Aphidoidea, polyphagous
Myrrha octodecimguttata formosa (Costa, 1849)	Native	Predator of Aphidoidea, polyphagous, also on conifers
Rhyzobius chrysomeloides (Herbst, 1792)	?	Predator of Coccoidea
Rhyzobius litura (Fabricius, 1787)	?	Predator of Coccoidea
Scymnus abietis (Paykull, 1798)	Introduced	Predator of Aphidoidea on deciduous trees
Scymnus interruptus (Goeze, 1777)	Native	Predator of Aphidoidea on deciduous trees and conifers
Corylophidae		
Arthrolips fasciata (Erichson, 1842)	Introduced	Mycophagous. Larvae and adults feed on fungal spores

Table 2 (continued).

Arthrolips picea (Comolli, 1837)	Native	Mycophagous. Larvae and adults feed on fungal spores
Sericoderus lateralis (Gyllenhal, 1827)	Native	Mycophagous. Larvae and adults feed on fungal spores
Cryptophagidae		
Anterophagus silaceus (Herbst, 1792)	Introduced	Larvae are mycophagous. Adults are frequent on flowers
Atomaria sp.	?	Mycophagous
Cryptophagus pilosus Gyllenhal, 1827	Native	Mycophagous
Ephistemus globulus (Paykull, 1798)	Native	Mycophogous
Curculionidae		
Brachytemnus porcatus (Germar, 1823)	Introduced	Saproxylic on Pinus, Abies and Quercus dry wood
Coccotrypes carpophagus (Hornung, 1842)	Introduced	Xylophagous on dry wood, fruits
Coelositona latipennis (Gyllenhal, 1834)	Native	Phytophagous on herbaceous plants and woody bushes
Crypturgus pusillus (Gyllenhal, 1813) **NRM**	Introduced	Xylophagous in the bark of Pinus, Abies and Picea trees weakened by other Scolytinae
Dryocoetes villosus (Fabricius, 1792)	Native	Xylophagous on dead deciduous trees – Quercus, Castanea, Fagus
Gonipterus platensis (Marelli, 1926)	Introduced	Larvae feed on Eucalyptus leaves
Hylastes attenuatus Erichson, 1836 **NRM**	Introduced	Xylophagous on stumps and roots of Pinus
Hylastes linearis Erichson, 1836	Introduced	Xylophagous on stumps and roots of Pinus
Hylastinus obscurus (Marsham, 1802)	Native	Xylophagous on roots of Fabaceae
Hylurgus ligniperda (Fabricius, 1787) **NRPS**	Introduced	Xylophagous on stumps and roots of Pinus
Hypoborus ficus Erichson, 1836	Introduced	Xylophagous on dead branches
Laparocerus noctivagans (Wollaston, 1854)	Endemic	Phytophagous and polyphagous
Liparthrum sp.	Native	Xylophagous on deciduous trees and woody bushes
Lixus pulverulentus (Scopoli, 1763)	Native	Phytophagous on Malvaceae
Mecinus pascuorum (Gyllenhal, 1813)	Introduced	Phytophagous on Plantago lanceolata
Melanobaris laticollis (Marsham, 1802)	Introduced	Phytophagous on Brassicaceae
Naupactus cervinus Boheman, 1840	Introduced	Phytophagous and polyphagous
Orthotomicus erosus (Wollaston, 1857)	Introduced	Xylophagous, mainly on Pinus in which is a vector of the fungus Sphaeropsis sapinea
Phloeotribus rhododactylus (Marsham, 1802)	Introduced	Xylophagous on Fabaceae and Oleaceae
Pissodes castaneus (De Geer, 1775)	Introduced	Xylophagous on weakened trees of Pinus, Abies and Larix
Pseudophloeophagus tenax (Wollaston, 1854)	Native	Xylophagous on dead wood
Tomicus destruens (Wollaston, 1865) **NRPS**	Native	Xylophagous on new shots of Pinus, Picea and Larix
Tychius cuprifer (Panzer, 1799)	Introduced	Phytophagous on herbaceous plants
Xyleborinus saxesenii (Ratzeburg, 1837)	Introduced	Xylophagous on conifers and deciduous trees
Dermestidae		
Dermestes undulatus Brahms, 1790	Introduced	Saprophagous on organic residues, carcasses
Dryopidae		
Dryops luridus (Erichson, 1847)	Native	Phytophagous, lives near water bodies
Endomychidae		
Symbiotes gibberosus (Lucas, 1846)	Native	Saprophagous on organic residues
Histeridae		
Acritus nigricornis (Hoffmann, 1803)	Native	Saprophagous on decomposing plant material
Carcinops pumilio (Erichson, 1834)	Introduced	Predator of fly eggs and larvae on decomposed materials
Paromalus flavicornis (Herbst, 1792)	Native	Predator under bark
Hydrophilidae		
Cercyon sp.	?	Saprophagous on animal and plant residues
Sphaeridium bipustulatum Fabricius, 1801	Introduced	Saprophagous on animal and plant residues
Laemophloeidae		
Cryptolestes ferrugineus (Stephens, 1831)	Introduced	Mycophagous under bark on fungi or plant residues
Placonotus donacioides (Wollaston, 1854)	Endemic	Predator under bark on fungi or plant residues
Placonotus granulatus (Wollaston, 1854)	Native	Predator under bark
Latridiidae		
Cartodere bifasciata (Reitter, 1877)	Native	Mycophagous under bark, feeding on spores and hyphae
Cartodere constricta (Gyllenhal, 1827)	Native	Mycophagous under bark, feeding on spores and hyphae
Cartodere nodifer (Westwood, 1839)	Native	Mycophagous under bark, feeding on spores and hyphae
Corticaria sp.	?	Mycophagous under bark, feeding on spores and hyphae
Cortinicara gibbosa (Herbst, 1793)	Native	Mycophagous under bark, feeding on spores and hyphae
Enicmus cf. *rugosus* (Herbst, 1793)	?	Mycophagous under bark, feeding on spores and hyphae
Enicmus cf. *testaceus* (Stephens, 1830)	?	Mycophagous under bark, feeding on spores and hyphae
Melanophthalma distinguenda (Comolli, 1837)	Native	Mycophagous under bark, feeding on spores and hyphae
Leiodidae		
Agathidium arcticum Thomson, 1862 **NRM**	Introduced	Saprophagous, feeding on fungi or decomposing organic materials
Leiodes calcarata (Erichson, 1845) **NRM**	Introduced	Saprophagous, feeding on fungi or decomposing organic materials
Lyctidae		
Lyctus brunneus (Stephens, 1830)	Introduced	Xylophagous on deciduous dead wood
Monotomidae		

Table 2 (continued).

Monotoma spinicollis Aubé, 1837	Native	Mycophagous under bark
Rhizophagus depressus (Fabricius, 1792)	Introduced	Predator in bark-beetle galleries
Mycetophagidae		
Litargops pictus (Wollaston, 1854)	Endemic	Mycophagous, under bark on decomposing wood
Litargus balteatus LeConte, 1856 **NRM**	Introduced	Mycophagous, under bark on decomposing wood
Litargus coloratus Rosenhauer, 1856	?	Mycophagous, under bark on decomposing wood
Nitidulidae		
Carpophilus hemipterus (Linnaeus, 1758)	Native	Saprophagous, on decomposing plant material
Carpophilus marginellus Motschulsky, 1858	Introduced	Saprophagous, on decomposing plant material
Epuraea ocularis Fairmaire, 1849	Introduced	Saprophagous, on decomposing plant material
Meligethes nigrescens Stephens, 1830	Native	Phytophagous on leaves and pollen of herbaceous plants
Phenolia limbata tibialis (Boheman, 1851)	Introduced	Saprophagous, decomposing plant material
Pityophagus laevior Abeille, 1872	Introduced	Predator in bark-beetle galleries
Xenostrongylus histrio Wollaston, 1854	Endemic	Phytophagous, larvae are leafminers in herbaceous plants
Oedemeridae		
Stenostoma lowei (Wollaston, 1854)	Endemic	Pollinophagous on flowers of varied plants
Phalacridae		
Olibrus affinis (Sturm, 1807)	Native	Pollinophagous, mainly on Asteraceae flowers
Stilbus testaceus (Panzer, 1797)	Native	Pollinophagous, mainly on Asteraceae flowers
Ptiliidae		
Acrotrichis sp.	?	Mycophagous on spores and hyphae
Ptenidium pusillum (Gyllenhal, 1808)	Native	Mycophagous on spores and hyphae
Ptinidae		
Sphaericus sp.	?	Saprophagous, on decomposing plant material
Salpingidae		
Sphaeriestes impressus (Wollaston, 1857)	Endemic	Predator of bark-beetle larvae
Sphaeriestes sp.	?	Predator of bark-beetle larvae
Scraptiidae		
Anaspis proteus Wollaston, 1854	Native	Pollinophagous, mainly on Asteraceae flowers
Silvanidae		
Cryptamorpha desjardinsii (Guérin-Meneville, 1844)	Introduced	Predator, Polyphagous
Silvanus lateritus (Broun, 1880)	Introduced	Mycophagous, mainly under the bark of deciduous trees
Uleiota planata (Linnaeus, 1760)	Introduced	Saproxylic, under the bark of deciduous trees, more rarely on conifers
Staphylinidae		
Anotylus sp.	?	Probably saprophagous on decomposing plant material
Atheta sp.	?	Probably mycophagous on decomposing plant material
Habrocerus capillaricornis (Gravenhorst, 1806)	Native	Saprophagous, feeding on fungi or decomposing organic material
Nudobius collaris (Erichson, 1839) **NRM**	Introduced	Predator of other coleoptera larvae under bark of Pinus
Philonthus sp.	?	Probably saprophagous on decomposing plant material
Platystethus sp.	?	Probably saprophagous on decomposing plant material
Sepedophilus sp.	?	Probably mycophagous on decomposing plant material
Tachyporus sp.	?	Probably saprophagous on decomposing plant material
Tenebrionidae		
Alphitobius diaperinus Kugel, 1797	Introduced	Omnivore, stored products pest
Corticeus pini (Panzer, 1799) **NRM**	Introduced	Saproxylic, under bark in the galleries of Scolytinae on Pinus
Nesotes confertus (Wollaston, 1854)	Endemic	Saprophagous, on decomposing plant material
Pentaphyllus testaceus (Hellwig, 1792) **NRM**	Introduced	Mycophagous on decomposing wood of trees
Tribolium castaneum (Herbst, 1797)	Introduced	Omnivore, stored products pest
Throscidae		
Trixagus sp.	?	Adults feed on pollen or fungi, and larvae are saprophagous

NRM – New record for Madeira Island; **NRPS** – New record for Porto Santo Island.

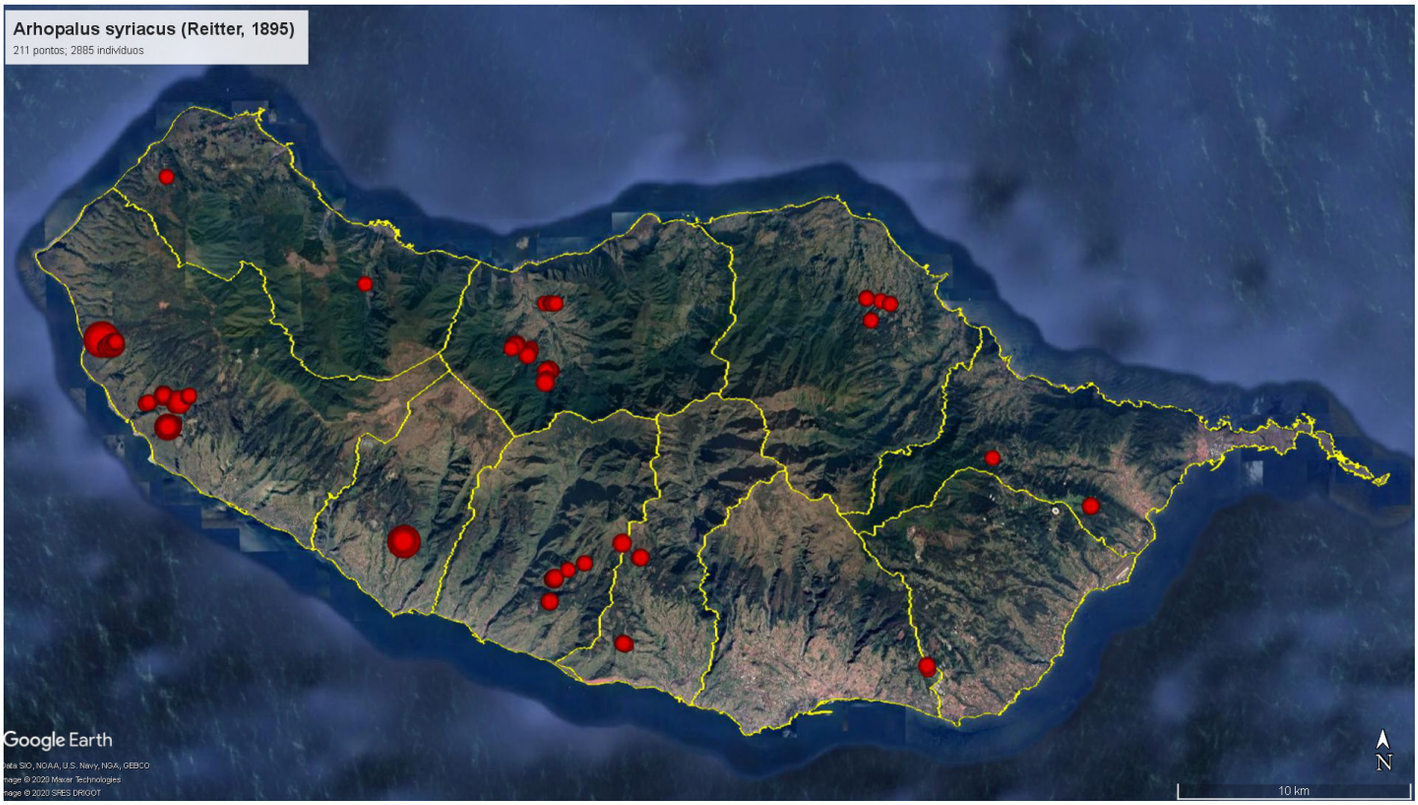


Fig. 1 – *Map Data*: SIO, NOAA, U.S. Navy, NGA, GEBCO, ®Maxar Technologies, ®SRES DRIGOT. Distribution of *Arhopalus syriacus* (Reitter) based on trap captures.

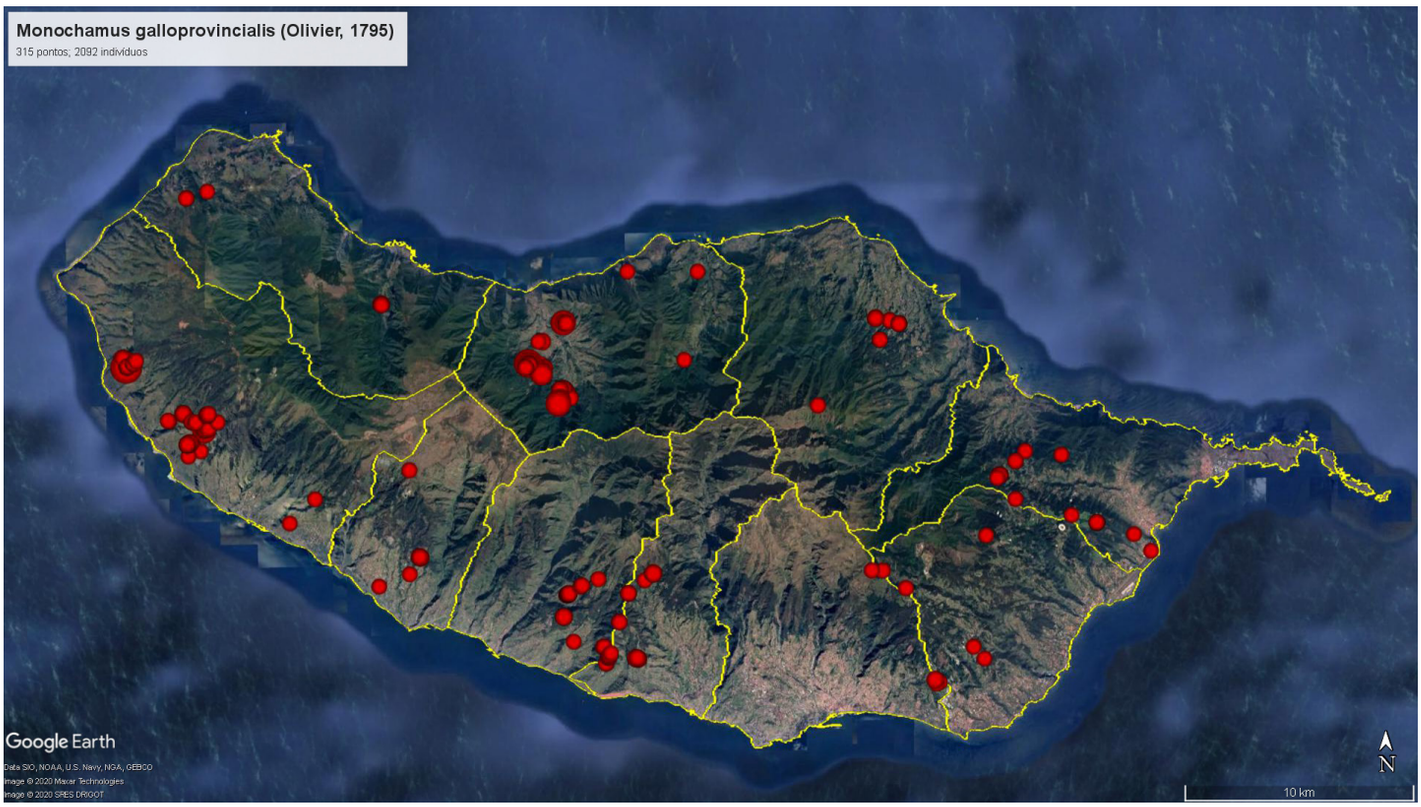


Fig. 2 – *Map Data*: SIO, NOAA, U.S. Navy, NGA, GEBCO, ®Maxar Technologies, ®SRES DRIGOT. Distribution of *Monochamus galloprovincialis* (Olivier) based on trap captures.

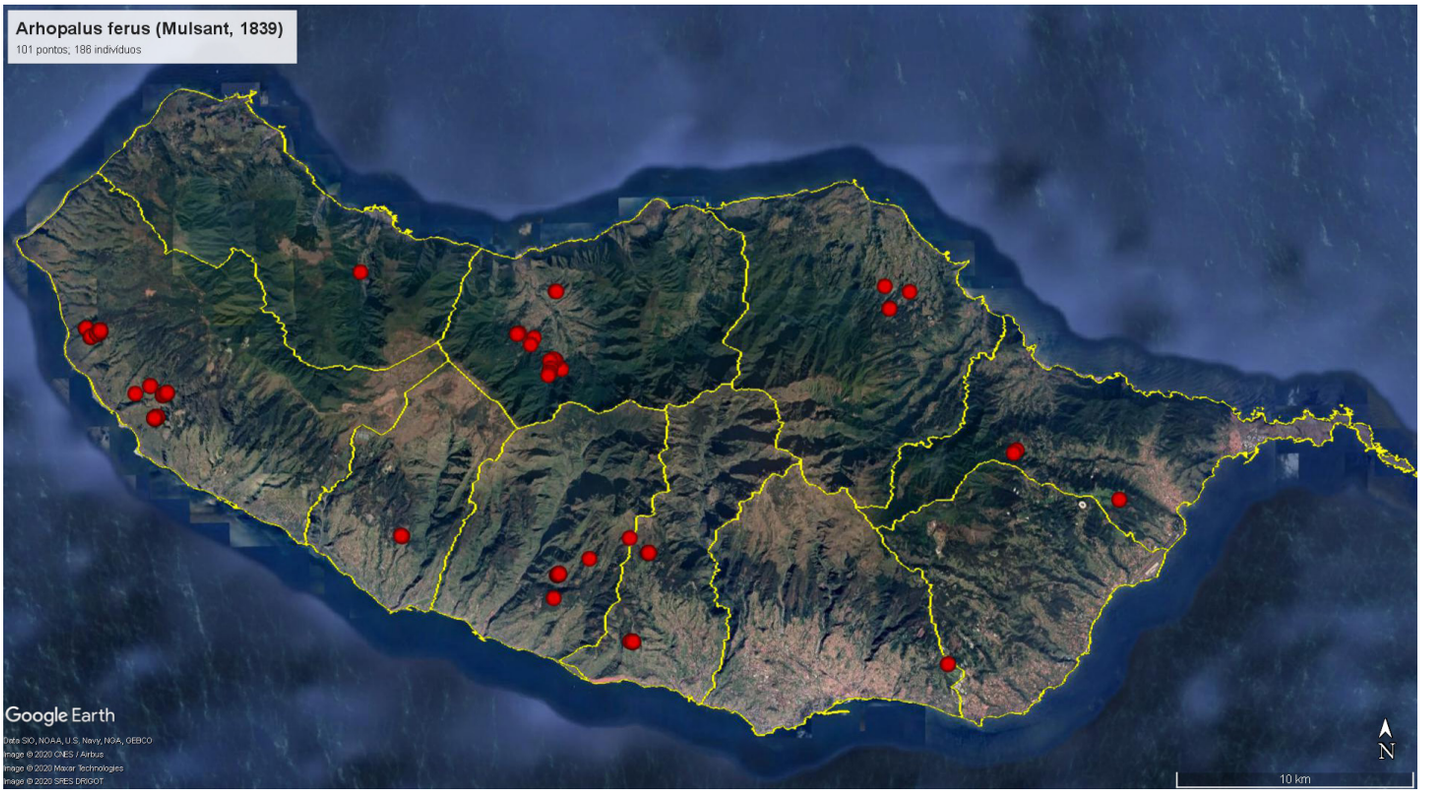


Fig. 3 – *Map Data*: SIO, NOAA, U.S. Navy, NGA, GEBCO, CNES/Airbus, ®Maxar Technologies, ®SRES DRIGOT. Distribution of *Arhopalus ferus* (Mulsant) based on trap captures.

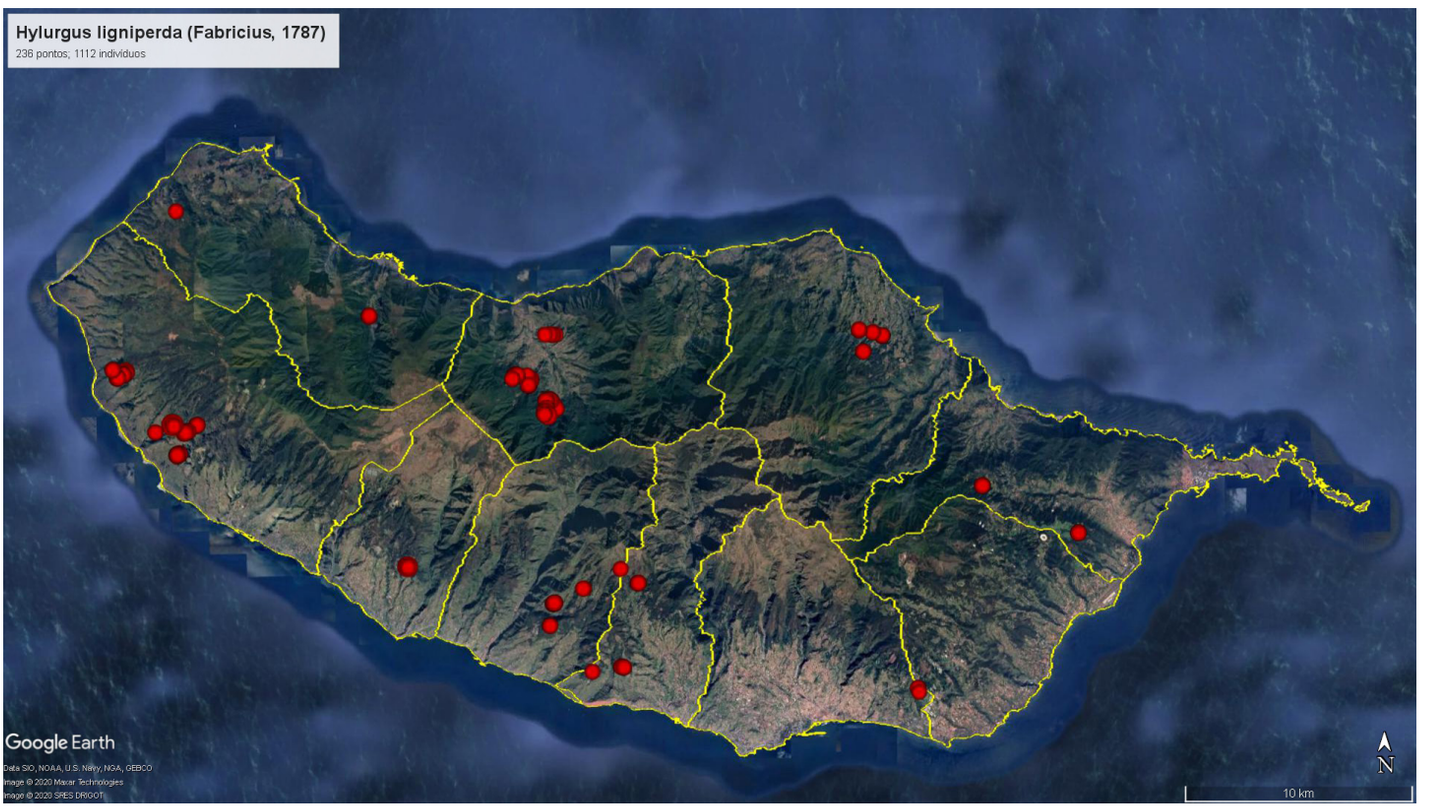


Fig. 4 – *Map Data*: SIO, NOAA, U.S. Navy, NGA, GEBCO, ®Maxar Technologies, ®SRES DRIGOT. Distribution of *Hylurgus ligniperda* (Fabricius) based on trap captures.

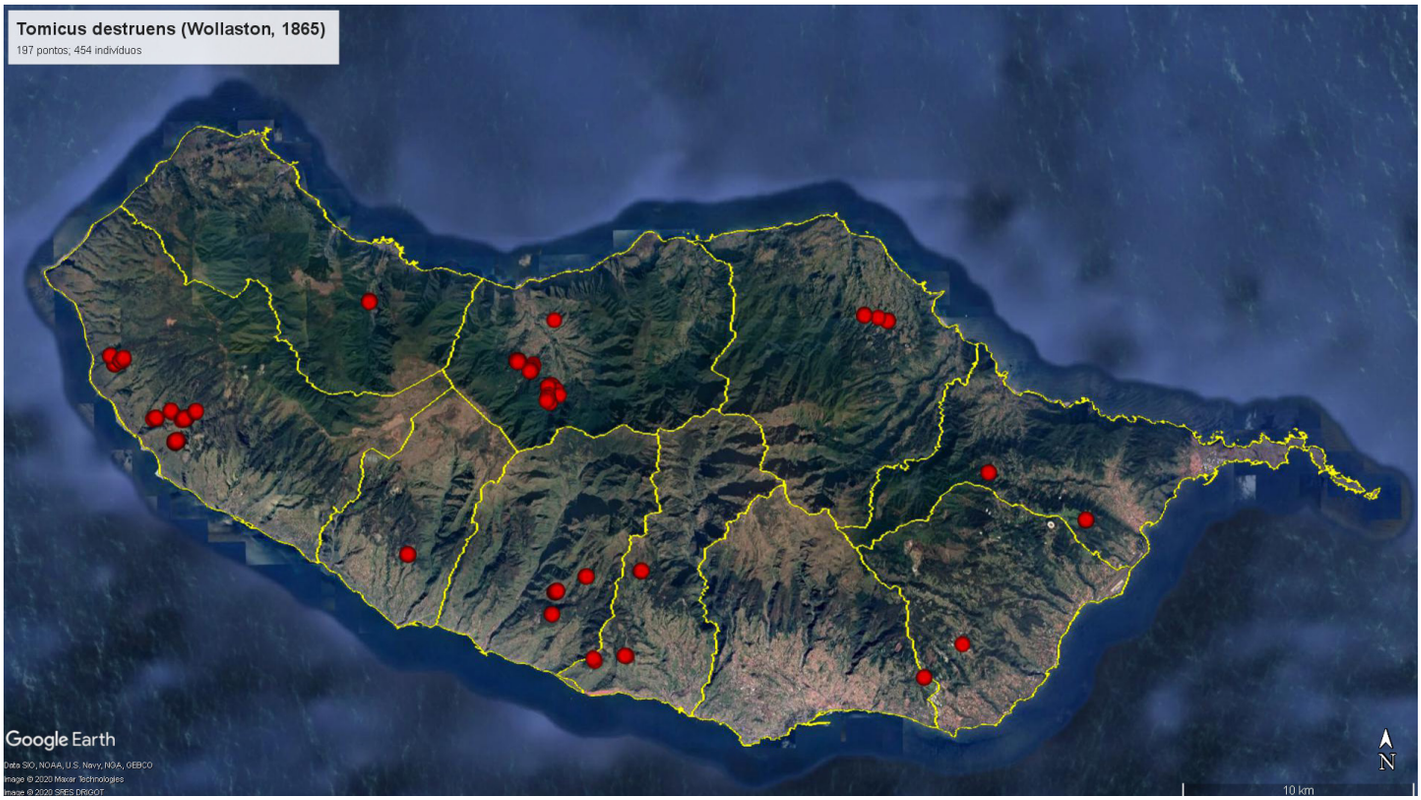


Fig. 5 – *Map Data*: SIO, NOAA, U.S. Navy, NGA, GEBCO, ®Maxar Technologies, ®SRES DRIGOT. Distribution of *Tomicus destruens* (Wollaston) based on trap captures.

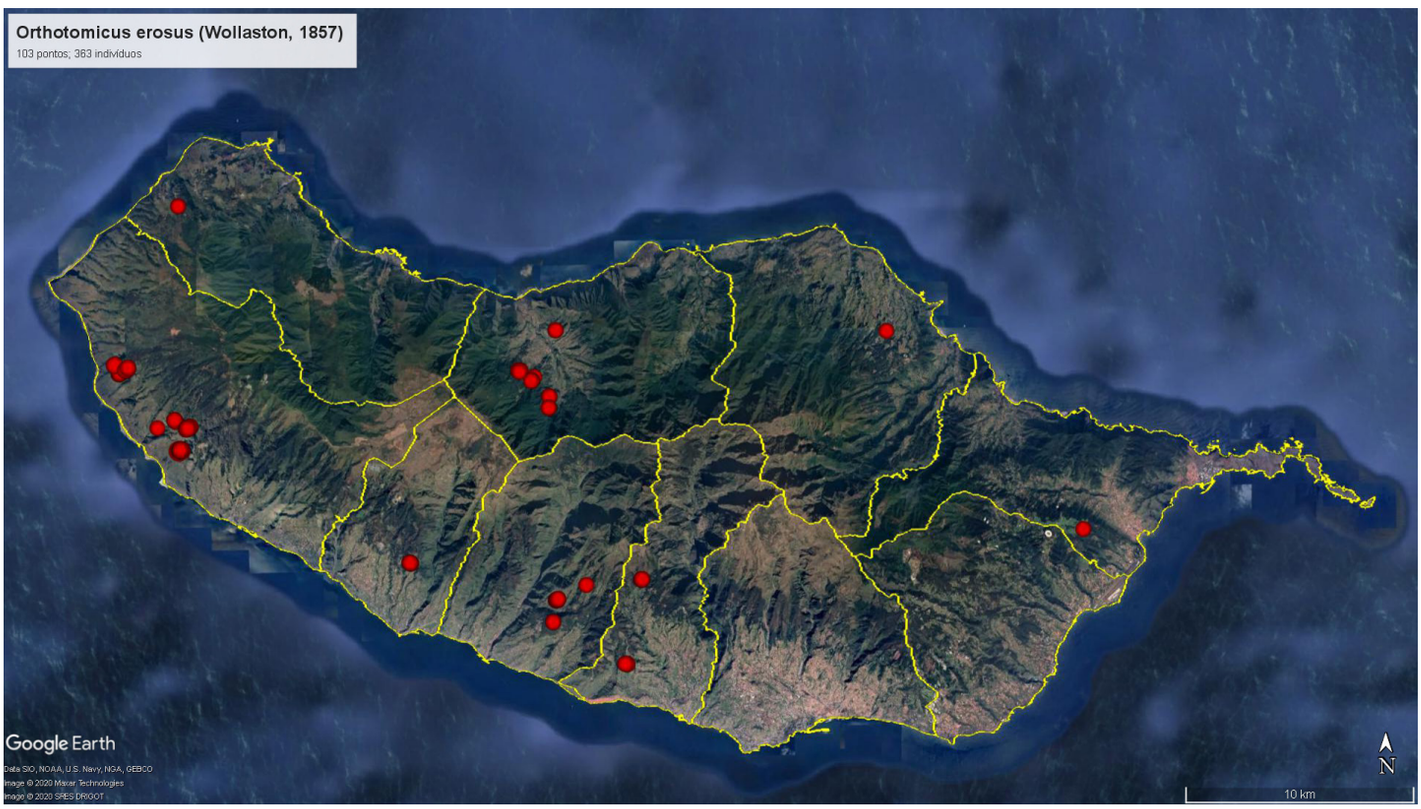


Fig. 6 – *Map Data*: SIO, NOAA, U.S. Navy, NGA, GEBCO, ®Maxar Technologies, ®SRES DRIGOT. Distribution of *Orthotomicus erosus* (Wollaston) based on trap captures.

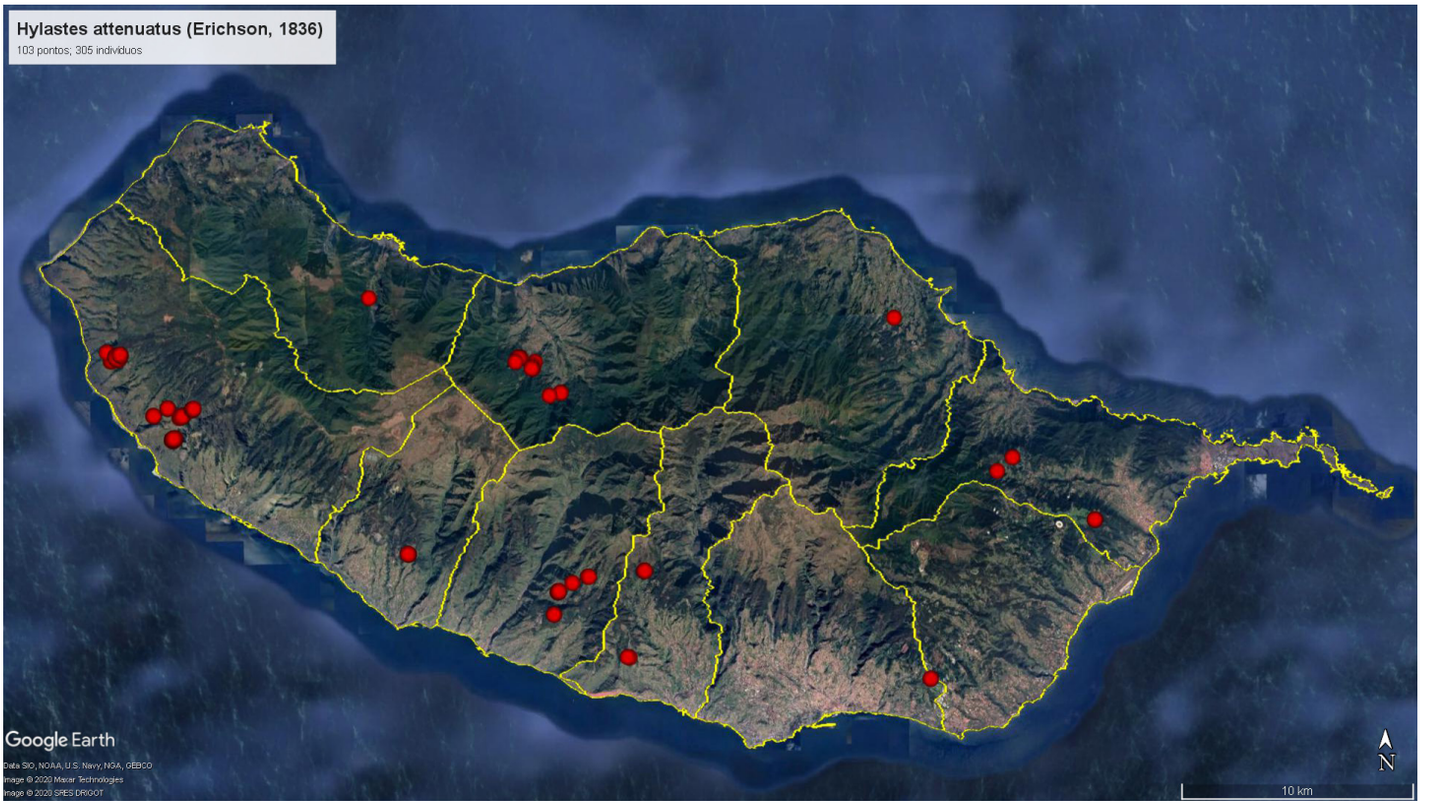


Fig. 7 – *Map Data*: SIO, NOAA, U.S. Navy, NGA, GEBCO, ®Maxar Technologies, ®SRES DRIGOT. Distribution of *Hylastes attenuatus* (Erichson) based on trap captures.

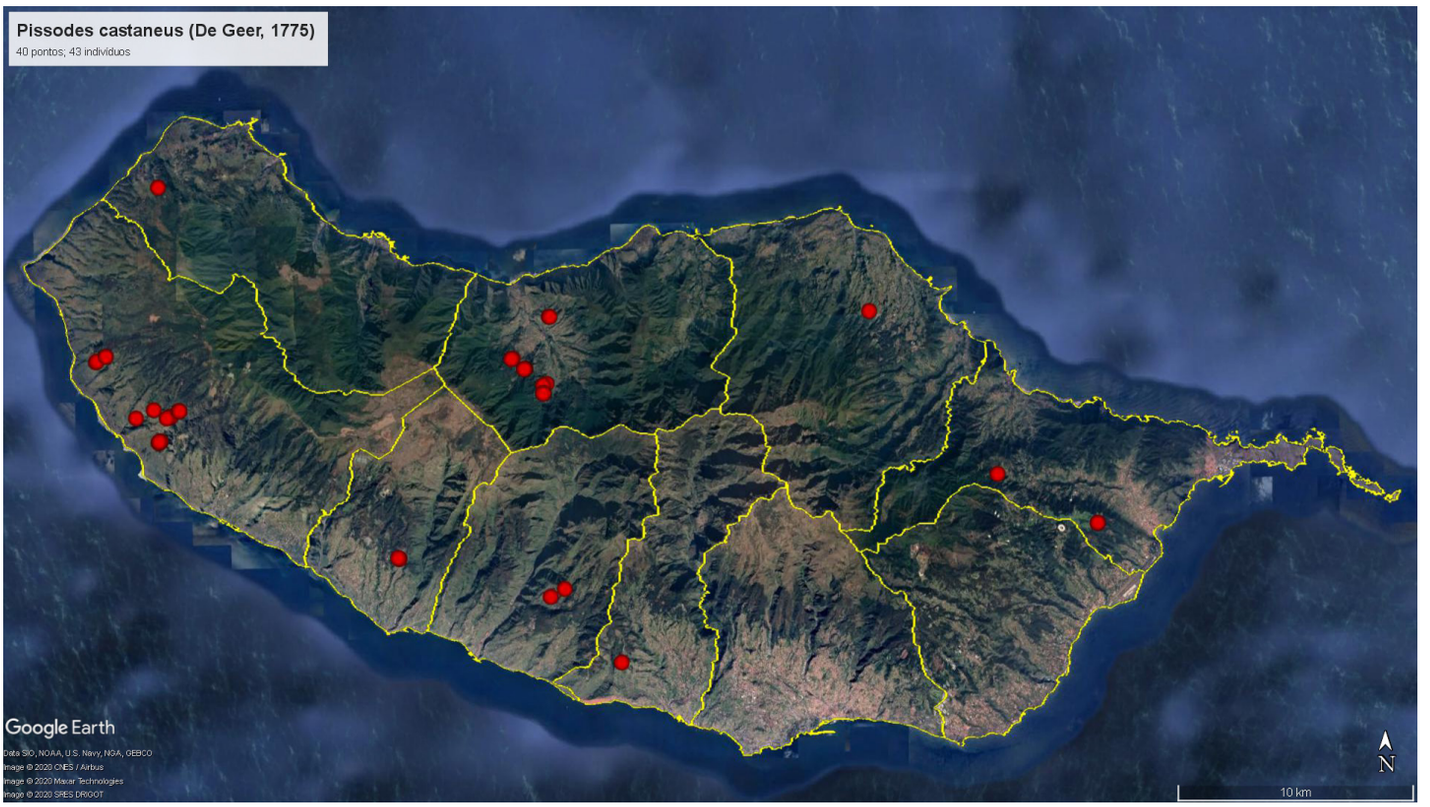


Fig. 8 – *Map Data*: SIO, NOAA, U.S. Navy, NGA, GEBCO, CNES/Airbus, ®Maxar Technologies, ®SRES DRIGOT. Distribution of *Pissodes castaneus* (De Geer) based on trap captures.

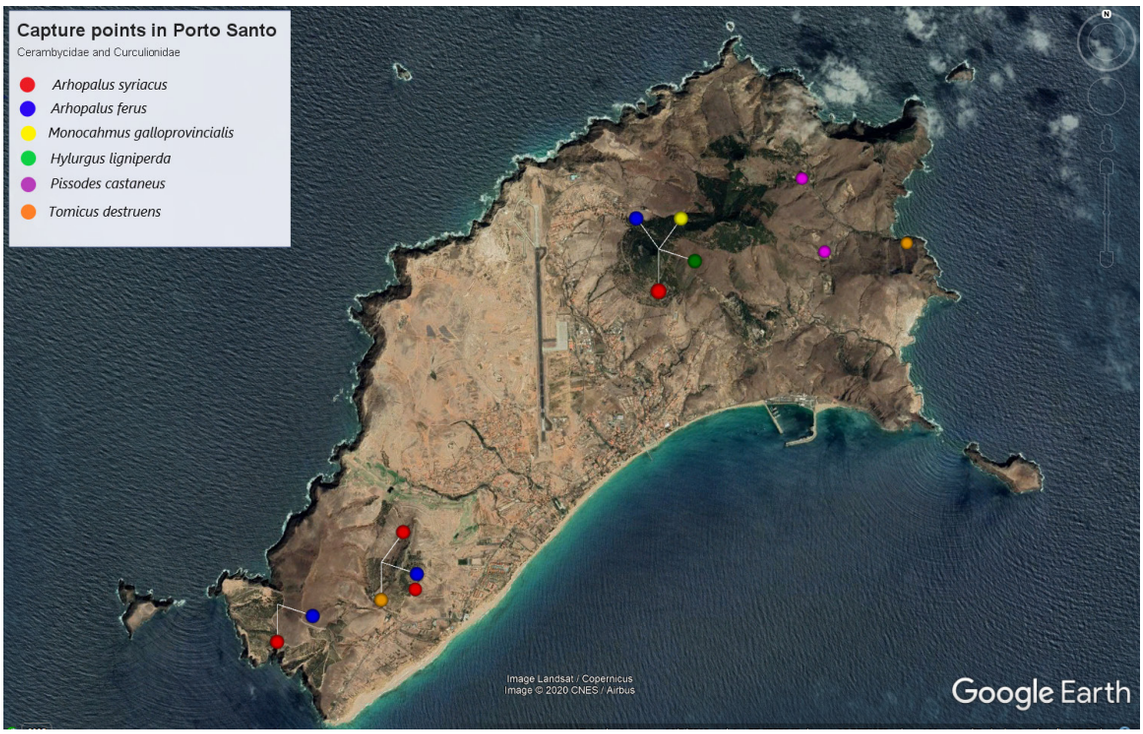


Fig. 9 – *Map Data*: Landsat/Copernicus, CNES/Airbus© 2020. Capture points of representative Cerambycidae and Curculionidae in Porto Santo Island.

Plate I – **a)** *Biphyllus lunatus* (F.), bar = 1 mm; **b)** *Buprestis novemmaculata* L., bar = 5 mm; **c)** *Chalcophora massiliensis* (Villers), bar = 6 mm; **d)** *Phaenops cyanea* F., bar = 2 mm; **e)** *Rhagium inquisitor* (L.), bar = 5 mm; **f)** *Clambus simsoni* Blackburn, bar = 0.5 mm; **g)** *Thanasimus formicarius* (L.), bar = 3 mm.

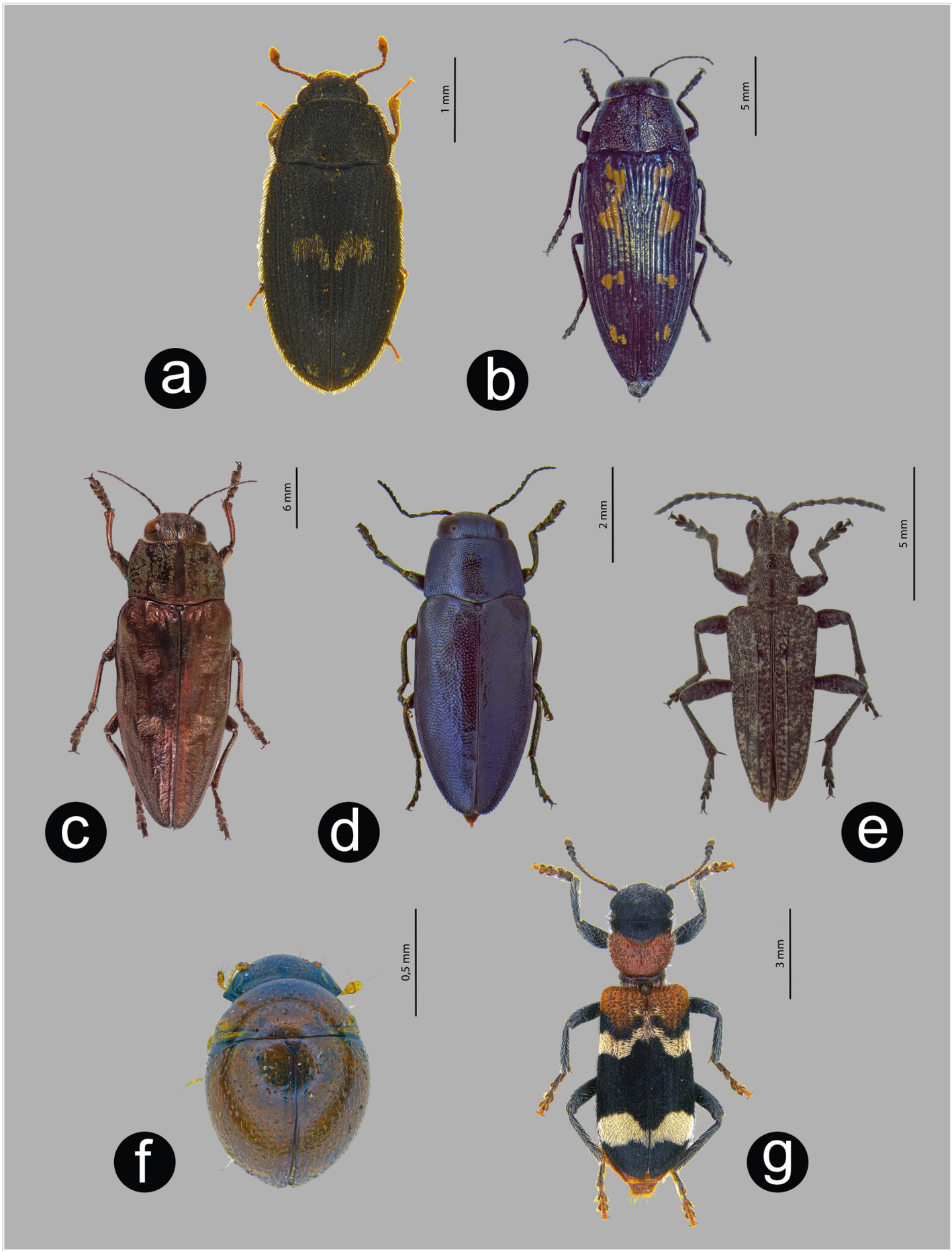
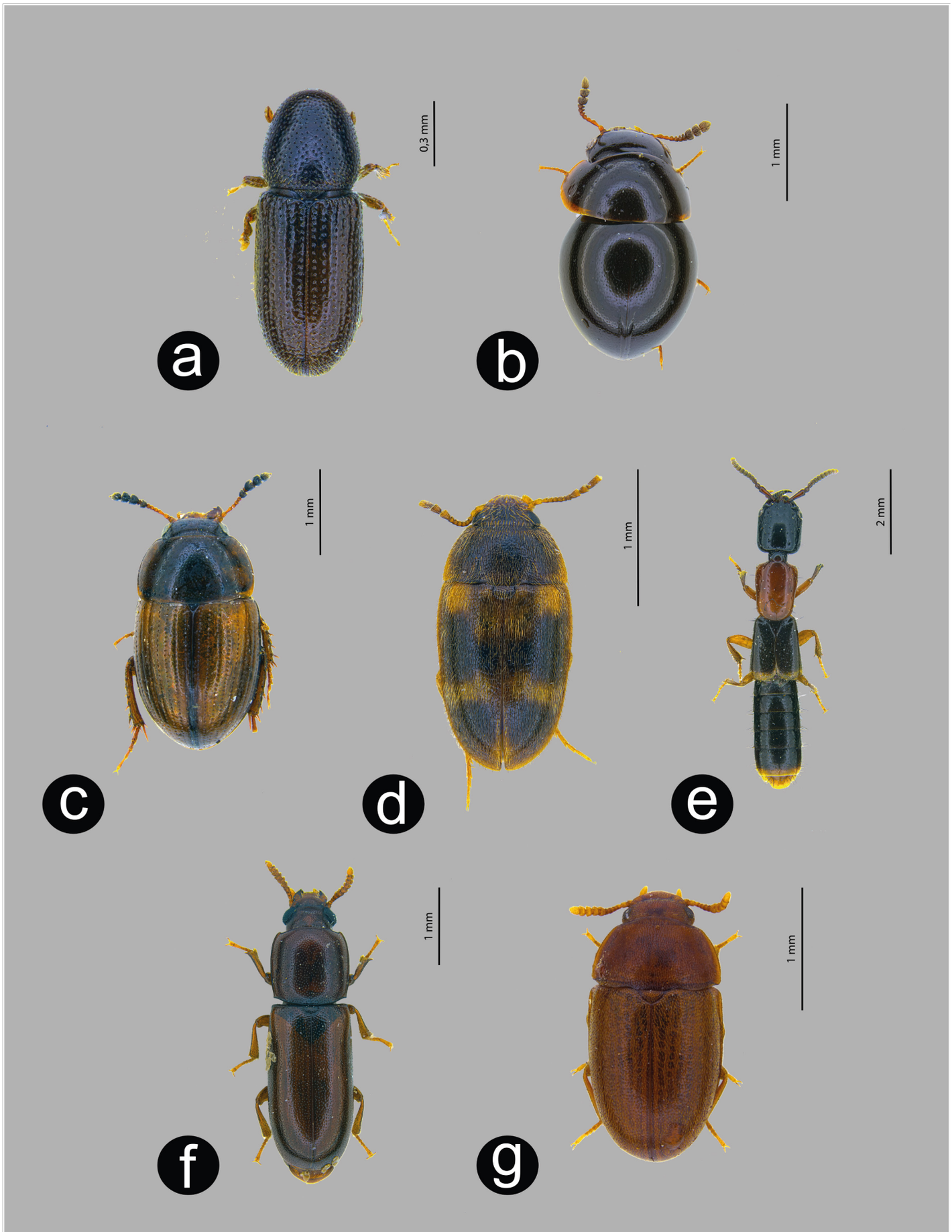

a
1 mm
b
5 mm
c
6 mm
d
2 mm
e
5 mm
f
0,5 mm
g
3 mm

Plate II – **a)** *Crypturgus pusillus* (Gyllenhal), bar = 0.3 mm; **b)** *Agathidium arcticum* Thomson, bar = 1mm; **c)** *Leiodes calcarata* (Erichson), bar = 1mm; **d)** *Litargus balteatus* LeConte, bar = 1 mm; **e)** *Nudobius collaris* (Erichson), bar = 2 mm; **f)** *Corticeus pini* (Panzer), bar = 1mm; **g)** *Pentaphyllus testaceus* (Hellwig), bar = 1 mm.


a
0,3 mm
b
1 mm
c
1 mm
d
1 mm
e
2 mm
f
1 mm
g
1 mm