

A survey of exotic arthropods in disturbed Azorean forest habitats using SLAM traps

Paulo A. V. Borges¹, Lucas Lamelas-López¹, Alejandra Ros-Prieto¹, Paulo A. V. Borges¹

¹ Universidade dos Açores; ce3c - Centre for Ecology, Evolution and Environmental, Rua Capitão João d'Ávila, Pico da Urze, 9700-042, Angra Do Heroísmo, Portugal

Corresponding author(s): Paulo A. V. Borges (paulo.av.borges@uac.pt) Lucas Lamelas-López (lucaslamelaslopez@gmail.com) Alejandra Ros-Prieto (alejandrarprieto@gmail.com)

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Abstract

The data we present consists in an inventory of exotic arthropods, potentially invasive, collected on exotic and mixed forests, as well disturbed native forest patches most of them not included in protected areas, on the Azores archipelago. The study was carried out between 2019 and 2020 in four islands: Corvo, Flores, Terceira and Santa Maria, where a total of 45 passive flight interception SLAM traps were deployed, during three to six consecutive months. This manuscript is the second contribution of the “SLAM Project - Long Term Ecological Study of the Impacts of Climate Change in the natural forest of Azores”. A total of 45 passive flight interception SLAM traps were deployed, during six consecutive months, collecting arthropods belonging to Arachnida, Diplopoda, Chilopoda and Insecta Classes. We collected a total of 21,175 specimens, belonging to 20 orders, 93 families and 249 species of arthropods. A total of 125 species are considered introduced, 89 native non-endemic and 35 endemic. We registered a total of 33 new records for one or more islands, of which five are new for Azores: *Dieckmanniellus nitidulus* (Gyllenhal, 1838), *Gronops fasciatus* Küster, 1851, *Hadroplontus trimaculatus* (Fabricius, 1775), *Hypurus berandi* (Perris, 1852) (all Coleoptera, Curculionidae) and *Cardiocondyla mauritanica* Forel, 1890 (Hymenoptera, Formicidae). This publication remarks the importance of disturbed native forest patches and exotic vegetation areas as potential reservoirs of exotic potentially invasive arthropods and also accommodating some rare relict endemic arthropod species

Keywords: Occurrence, Specimen

Project details

Project title: A survey of exotic arthropods in disturbed Azorean forest habitats using SLAM traps

Personnel: Paulo Borges, Lucas Lamelas-López, Alejandra Ros-Prieto

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Study area descriptions/descriptor: The study area comprises Corvo, Flores, Terceira and Santa Maria islands, in the Azores archipelago, located in the North Atlantic, roughly at 38°43'21"N 27°13'14"W and 38°27'30"N 28°19'22"W respectively. The climate is temperate oceanic, with regular and abundant rainfall, high levels of relative humidity and persistent winds, mainly during the winter and autumn seasons.

Design description: Passive flight interception SLAM traps (Sea, Land and Air Malaise trap) were used to sample the plots in the four study islands, with one trap being setup at each plot. Trap size is of approximately 110 x 110 x 110 cm. The trap functioning consist on that the intercepted arthropods crawl up the mesh and then fall inside the sampling recipient, which is filled with propylene glycol (pure 1,2-PROPANODIOL) (Borges et al, 2017). Although this protocol was originally developed to sample flying arthropods, by working as an extension of the tree, non-flying species can also crawl into the trap (Borges et al, 2017), enhancing the range of groups that can be sampled by this technique. Recent studies have used this sampling technique to study diversity and abundance variations in the communities of arthropod on Azorean native areas (Matthews et al, 2019, Borges et al, 2020). The traps samples were collected every three or six months.

Data published through GBIF: http://ipt.gbif.pt/ipt/resource?r=pribes_exotic_arthropods

Taxonomic coverage

General taxonomic coverage description: The following Classes and Orders are covered:

Arachnida: Araneae; Opiliones; Pseudoscorpiones

Chilopoda: Geophilomorpha; Lithobiomorpha; Scolopendromorpha; Scutigromorpha

Diplopoda: Julida; Polydesmida

Insecta: Archaeognatha; Blattodea; Coleoptera; Dermaptera; Hemiptera; Hymenoptera; Isoptera; Neuroptera; Orthoptera; Phasmatodea; Psocodea; Thysanoptera; Trichoptera.

Taxonomic ranks

Phylum: Arthropoda

Common names: Arthropods

Spatial coverage

General spatial coverage: Corvo, Flores, Terceira and Santa Maria islands, in the Azores archipelago (Portugal).

Coordinates:

Corvo: 39°42'6.75"N Latitude; 31°6'6"W Longitude

Flores: 39°26'37"N Latitude; 31°11'57"W Longitude

Terceira: 38°38'16.8"N and 38°48'50.4"N Latitude; 27°23'38.4"W and 27°0'54"W Longitude

Santa Maria: 36°58'29"N Latitude; 25°05'41"W Longitude

Coordinates: 36°54'21.53"N and 39°44'27.55"N Latitude; 31°17'40.4"W and 24°56'59.82"W Longitude

Temporal coverage: May 15, 2019 - September 16, 2020

Natural collections description

Collection name: Entomoteca Dalberto Teixeira Pombo (DTP)

Collection identifier: DTP

Specimen preservation method: Alcohol

Methods

Method step description: At the laboratory, specimen sorting and arthropod identification followed standard procedures. A combination of morphological and anatomical characters and reproductive structures was used for species identification. A reference collection was made for all collected specimens by assigning them a morphospecies code number and depositing them at the Dalberto Teixeira Pombo Insect Collection, University of Azores.

Study extent description: The study was conducted in four islands of the Azores archipelago, Corvo, Flores, Terceira and Santa Maria islands. The sampled habitats included exotic species dominated forests, mixed forests (native and exotic species) and native forest patches not included on Protected Areas. The exotic forests were dominated mainly by *Pittosporum undulatum*, *Eucalyptus* spp., *Cryptomeria japonica*, *Acacia melanoxylon* and *Pinus pinaster*. The native forests were mainly dominated by *Erica azorica*, *Laurus azorica*, *Ilex perado azorica* and *Juniperus brevifolia*, between others. Mixed forests included exotic

and native species of vegetation

Sampling description: A total of 45 passive flight interception SLAM traps (Sea, Land and Air Malaise trap) were used to sample the plots in the four study islands, with one trap being setup at each plot. Trap size is of approximately 110 x 110 x 110 cm. The trap functioning consist on that the intercepted arthropods crawl up the mesh and then fall inside the sampling recipient, which is filled with propylene glycol (pure 1,2-PROPANODIOL) (Borges et al, 2017). A total of 19 SLAM traps were deployed in exotic forest areas, 8 on native forest patches, and 18 on mixed forests. The traps samples were collected every three or six months.

Quality control description: All sampled individuals were first sorted by trained paratonomists. All specimens were allocated to a taxonomic species by Paulo A. V. Borges. Despite the uncertainty of juvenile identification, juveniles are also included in the data presented in this paper, since the low diversity allowed a relatively precise identification of this life-stage in Azores.

Datasets

Dataset description

Object name: Darwin Core Archive A survey of exotic arthropods in disturbed Azorean forest habitats using SLAM traps

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Format version: 1.0

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Metadata language: English

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Hierarchy level: Dataset

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