

Long-term monitoring of Azorean forest spiders – Part 2

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Received {date}; Revised {date}; Accepted {date}; Published {date}

Citation: Combination of authors, year of data paper publication (in parentheses), Title, Journal Name, Volume, Issue number (in parentheses), and doi of the data paper.

Resource Citation

Lhoumeau S, Borges P A V (2022): Long-term monitoring of Azorean forest spiders – Part 2. v1.3. Universidade dos Açores. Dataset/Samplingevent. http://ipt.gbif.pt/ipt/resource?r=spiders_azores_2021&v=1.3

Abstract

The data we present hereafter are part of the long-term project SLAM (Long Term Ecological Study of the Impacts of Climate Change in the natural forest of Azores). This project started in 2012, and focuses on arthropod monitoring, with the aim to understand the impact of the drivers of biodiversity erosion on Azorean native forests (Azores, Macaronesia, Portugal). In this publication, we describe the second SLAM sampling database for the arachnofauna of native forests on two islands (Pico and Terceira), collected between 2019 and 2021.

Keywords: Arthropoda, Araneae, Macaronesia, Azores, Terceira, Pico, Laurissilva forest, Long-term sampling, Sampling event

General description

Purpose: This publication is the second of a series that explore time-series data for the spider fauna in two Azorean islands (Pico and Terceira). The first part of the data, from 2012 to 2019 is already published (Costa and Borges 2021). This publication aims to describe the most recent data (from 2019 to 2021)

Additional information: Personnel: The project was conceived and is being led by Paulo A.V. Borges.

Fieldwork: For the period 1999-2021 (Terceira Island) - Paulo A. V. Borges, Rui Carvalho, Rui Nunes, Sébastien Lhoumeau; (Pico Island) - Paulo Freitas, Sónia Manso.

Parataxonomists: For the period 1999-2021 – Abrão Leite, Adrian Fernandez Marinez, Emanuela Cosma, Jonne Bonnet, Joel Martin Aye, Loic Navarro, Magí Ramon Martorell, Marco Canino, Natalia Fierro Frerot, Sébastien Lhoumeau, Valentin Moley.

Taxonomists: Paulo A. V. Borges and Luís Carlos Crespo

Voucher specimen management was mainly undertaken by Abrão Leite, Sébastien Lhoumeau and Paulo A. V. Borges.

Project details

Project title: Long-term monitoring of Azorean forest spiders – Part 2

Personnel: Paulo A. V. Borges, Sébastien Lhoumeau

Funding: For the period 2019-2021 only the following sources of funding were available:

- EU ERASMUS + Training Grants to Adrian Fernandez Marinez, Emanuela Cosma, Jonne Bonnet, Joel Martin Aye, Loic Navarro, Magí Ramon Martorell, Marco Canino, Natalia Fierro Frerot, Sébastien Lhoumeau, Valentin Moley.

- Direcção Regional do Ambiente – LIFE-BETTLES (LIFE18 NAT_PT_000864).

- FEDER - AZORESBIOPORTAL –PORBIOTA (ACORES-01-0145-FEDER-000072)

- Science and Technology Foundation (FCT) - MACRISK-Trait-based prediction of extinction risk and invasiveness for Northern Macaronesian arthropods (FCT-PTDC/BIA-CBI/0625/2021)

Study area descriptions/descriptor: Terceira (area: 400.6 km²; elevation: 1021 m a.s.l.) and Pico (area: 445 km²; elevation: 2350 m a.s.l) Islands are two islands in the central group of 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 both islands, with one trap being setup at each plot, each one being 110 x 110 x 110 cm. In this type of trap the trapped arthropods crawl up the mesh and then fall inside the sampling recipient (Borges et al, 2017). Each one is filled with propylene glycol (pure 1,2-PROPANODIOL) to kill the captured arthropods and conserve the sample between collections, enabling also the preservation of DNA for future genetic analysis. Although this protocol was developed to sample flying arthropods, by working as an extension of the tree, non-flying species such as spiders can also crawl into the trap (Borges et al, 2017), enhancing the range of groups that can be sampled by this technique. Because of this, previous studies have used these traps to analyse diversity and abundance changes in the arthropod communities in Azores pristine forest sites (Matthews et al, 2019, Borges et al, 2020). The traps samples were collected every 3 months

Data published through GBIF: http://ipt.gbif.pt/ipt/resource?r=spiders_azores_2021

Taxonomic coverage

General taxonomic coverage description: Spiders (Arachnida, Araneae)

Taxonomic ranks

Order: Araneae

Common names: Spiders

Spatial coverage

General spatial coverage: Pico and Terceira islands in Azorean archipelago (Portugal)

Coordinates: 38°22'40.8"N and 38°48'57.6"N Latitude; 28°32'24"W and 27°1'26.4"W
Longitude

Temporal coverage: December 17, 2018 - March 12, 2022

Natural collections description

Collection name: Entomoteca Dalberto Teixeira Pombo (DTP)

Collection identifier: DTP

Specimen preservation method: Alcohol

Methods

Method step description: The data has been published as a Darwin Core Archive (DwC-A), which is a standardised format for sharing biodiversity data as a set of one or more data tables. The core data table (events) contains 495 records and one data table extension also exists (occurrence), with 3025 records. The extension supplies extra information about the core record

Study extent description: We sampled a total of twenty plots on Terceira Island (13 plots) and Pico Island (7 plots) using SLAM traps (Table 1) (see Costa and Borges, 2021). In both islands, these are located in some of the best preserved wet forests patches of the two islands, having only limited human disturbance (Borges et al. 2017). The sampling plots are mostly dominated by endemic vegetation like *Juniperus brevifolia*, *Erica azorica*, *Laurus azorica* and *Ilex azorica* (see (Borges et al. 2017) for more details).

In Pico, the plots located at lower elevation (0-400 m a.m.s.l.) are dominated by *Erica azorica* and *Morella faya*, but with some presence of *Pittosporum undulatum*. At higher elevations (600-1000 m a.m.s.l.), the dominant vegetation is more similar to that in the plots of Terceira, and is composed of *Laurus azorica*, *Juniperus brevifolia* and *Ilex azorica*.

Sampling description: Passive flight interception SLAM traps (Sea, Land and Air Malaise trap) were used to sample the plots in both islands, with one trap being setup at each plot, each one being 110 x 110 x 110 cm. In this type of trap the trapped arthropods crawl up the mesh and then fall inside the sampling recipient (Borges et al, 2017). Each one is filled with propylene glycol (pure 1,2-PROPANODIOL) to kill the captured arthropods and conserve the

sample between collections, enabling also the preservation of DNA for future genetic analysis. Although this protocol was developed to sample flying arthropods, by working as an extension of the tree, non-flying species such as spiders can also crawl into the trap (Borges et al, 2017), enhancing the range of groups that can be sampled by this technique. Because of this, previous studies have used these traps to analyse diversity and abundance changes in the arthropod communities in Azores pristine forest sites (Matthews et al, 2019, Borges et al, 2020). The traps samples were collected every 3 months between December 2018 and January 2022 in Pico, and between December 2019 and March 2022 in Terceira

Quality control description: All sorted specimens were identified by a taxonomical expert

Datasets

Dataset description

Object name: Darwin Core Archive Long-term monitoring of Azorean forest spiders – Part 2

Character encoding: UTF-8

Format name: Darwin Core Archive format

Format version: 1.0

Distribution: http://ipt.gbif.pt/ipt/archive.do?r=spiders_azores_2021

Publication date of data: 2022-10-17

Language: English

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Metadata language: English

Date of metadata creation: 2022-10-11

Hierarchy level: Dataset

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- 166) Costa, R. & Borges, P.A.V. (2021). SLAM Project - Long term ecological study of the impacts of climate change in the natural forest of Azores: I - the spiders from native forests of Terceira and Pico Islands (2012-2019). *Biodiversity Data Journal*, 9: e69924 DOI:10.3897/BDJ.9.e69924