Inventory of Arthropods of Azorean Urban Gardens

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Abstract

The data we present are part of the long-term project SLAM (Long Term Ecological Study of the Impacts of Climate Change in the natural forest of Azores) aiming to assess the impact of biodiversity erosion drivers on Azorean native biota, using long-term ecological data. Additionally to SLAM traps, nocturnal Active Aerial Searching and nocturnal Foliage Beating methods were used to sample, between 2017 and 2018, the arthropod biodiversity on two historical urban gardens of Azores, the “Jardim Botânico” of Faial Island, and “Jardim Duque da Terceira” of Terceira Island. This publication includes new data and updates the knowledge about the arthropod diversity and taxonomy of Arteaga et al. 2020, and contributes to the study of the urban gardens role to conservation of native biota.

Keywords: Arthropods, Biodiversity, Exotic species, Inventory, Native species, Oceanic Islands, Urban Gardens

Project details

Project title: Inventory of Arthropods of Azorean Urban Gardens
Personnel: Paulo A. V. Borges, Lucas Lamelas-López
Funding: FEDER in 85% and by Azorean Public funds by 15% through Operational

Program Azores 2020, under the project Green Garden Azores (ACORES-01-0145-FEDER-000070), the project AZORESBIOPORTAL (ACORES-01-0145-FEDER-000072) and also the project Portal da Biodiversidade dos Açores (2022-2023) - PO Azores Project - M1.1.A/INFRAEST CIENT/001/2022.

Study area descriptions/descriptor: The study area comprises Terceira (total area: 400.2 km²; maximum elevation: 1021 m a.s.l.) and Faial (total area: 172 km2; maximum elevation 1043 m a.s.l.) islands. They are located in the central group of the Azores archipelago (North Atlantic), roughly at 38°43'17"N 27°13'14"W. The climate of the archipelago is temperate oceanic, characterized by regular and abundant rainfall, high levels of relative humidity and persistent winds. The landscape of the islands is mainly dominated by urban and agricultural areas at the lowest elevations; pasturelands and exotic tree plantations inland; and native forests located at highest elevations (Gaspar et al. 2011).

The study was carried out on two botanical gardens, named "Jardim Botânico", in Faial Island, and "Jardim Duque da Terceira" in Terceira Island.

Design description: Passive Flight Interception traps (SLAM traps), nocturnal Active Aerial Searching (AAS) and nocturnal Foliage Beating (FBN) methods were used to sample the arthropod biodiversity on two historical urban gardens of Azores: the "Jardim Botânico", located in Horta city, in Faial Island, and "Jardim Duque da Terceira" located in Angra do Heroísmo city, in Terceira Island. AAS and FBN are reliable methods to collect samples of arthropods that are mainly active during night (Borges et al. 2018). The collected specimens were preserved in ethanol 96%. SLAM traps were placed in both gardens in order to collect mainly diurnal flying and non-flying arthropods, through interception and conservation on a propylene-glycol recipient of the captured specimens (Borges et al. 2017). The SLAM traps were placed during 6 consecutive months, checked monthly. The study was conducted between April 2017 and June 2018. For more details about sampling methods, see Arteaga et al. 2020. Collected samples were sorted and posteriorly identified by an expert taxonomist (P.A.V.B) in laboratory.

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

Taxonomic coverage

General taxonomic coverage description: The study comprise the arthropod Classes: Arachnida, Chilopoda, Diplopoda and Insecta.

Taxonomic ranks

Phylum: Arthropoda

Class: Arachnida, Chilopoda, Diplopoda, Insecta

Order: Araneae, Opiliones, Pseudoscorpiones, Scutigeromorpha, Julida, Coleoptera, Dermaptera, Hemiptera, Hymenoptera, Blattodea, Archaeognatha, Neuroptera, Phasmida, Psocodea, Thysanoptera

Common names: Arthropods, Arachnids, Centipedes, Millipedes, Insects, Spiders, Opilions, Pseudoscorpiones, Scutigeromorphs, Millipedes, Beetles, Earwigs, Bugs, Ants, Termites,

Bristletails, Lacewings, Stick insects, Barklice, Trips

Spatial coverage

General spatial coverage: The study was conducted in Faial and Terceira islands, Azores, Portugal
Coordinates: 38°30'28.8"N and 38°48'25.2"N Latitude; 28°50'20.4"W and 27°2'20.4"W Longitude

Temporal coverage: April 1, 2017 - June 30, 2018

Natural collections description

Parent collection identifier: DTP
Collection name: Entomoteca Dalberto Teixeira Pombo
Collection identifier: DTP
Specimen preservation method: Alcohol
Curatorial unit: Between 63396 and 63400 (Specimens)

Methods

Method step description: Passive Flight Interception traps (SLAM traps), nocturnal Active Aerial Searching (AAS) and nocturnal Foliage Beating (FBN) methods were used to sample the arthropod biodiversity (Arachnida, Chilopoda, Diplopoda and Insecta Classes) on two historical urban gardens of the Azores. AAS consists on collecting arthropods found above knee-level by hand, forceps, pooter or brush and immediately transferring them into vials containing ethanol 96%. FBN consists on beat tree and shrub branches with a wooden stick, and collect the fallen specimens on a beating tray, posteriorly transferred to vials containing ethanol 96%. The SLAM traps consists on structures of 110 cm3 designed to intercept flying and non-flying arthropods. They were placed in the gardens during 6 consecutive months, checked monthly.
Study extent description: The study was conducted on two urban gardens, the “Jardim Botânico”, located in Horta city, in Faial Island, and “Jardim Duque da Terceira” located in Angra do Heroísmo city, in Terceira Island. The first, is mainly composed by endemic and native plant species, but also includes some introduced species common and widespread in the Azores. The second garden includes mainly collections of introduced trees, shrubs and palms from worldwide (see for more details Arteaga et al. 2020).
Sampling description: Passive Flight Interception traps (SLAM traps), nocturnal Active Aerial Searching (AAS) and nocturnal Foliage Beating (FBN) methods were used to sample the arthropod biodiversity (Arachnida, Chilopoda, Diplopoda and Insecta Classes) on two historical urban gardens of the Azores, between 2017 and 2018: the “Jardim Botânico”, located in Horta city, in Faial Island, and “Jardim Duque da Terceira” located in Angra do Heroísmo city, in Terceira Island. AAS consists on collecting arthropods found above

knee-level by hand, forceps, pooter or brush and immediately transferring them into vials containing ethanol 96%. FBN consists on beat tree and shrub branches with a wooden stick, and collect the fallen specimens on a beating tray, posteriorly transferred to vials containing ethanol 96%.
AAS and FBN are reliable methods to collect samples of arthropods that are mainly active during night (Borges et al. 2018). The SLAM traps consists on structures of 110 cm3 designed to intercept flying and non-flying arthropods. They were placed in the gardens during 6 consecutive months, checked monthly.
For more details about sampling methods, see Arteaga et al. (2020). Collected samples were sorted and posteriorly identified by an expert taxonomist (P.A.V.B) in laboratory.
Quality control description: All collected specimens were identified by an expert taxonomist (P.A.V.B) in laboratory.

Datasets

Dataset description
Object name: Darwin Core Archive Inventory of Arthropods of Azorean Urban Gardens
Character encoding: UTF-8
Format name: Darwin Core Archive format
Format version: 1.0
Distribution: http://ipt.gbif.pt/ipt/archive.do?r=arthropods_azorean_urban_gardens
Publication date of data: 2022-12-02
Language: English
Licences of use: Creative Commons Attribution (CC-BY) 4.0 License

Metadata language: English
Date of metadata creation: 2022-11-14
Hierarchy level: Dataset

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