

# Standardised sampling of odonates (Odonata) in Serra da Estrela (Portugal) - 2013 and 2014

Mário Boieiro<sup>1</sup>, Sandra Antunes<sup>2</sup>, Hugo Figueiredo<sup>3</sup>, Albano Soares<sup>2</sup>, Ana Lopes<sup>4</sup>, Eva Monteiro<sup>2</sup>, Patrícia Garcia Pereira<sup>2</sup>, Carla Rego<sup>5</sup>, José Conde<sup>3</sup>, Paulo A. V. Borges<sup>1</sup>, Artur R. M. Serrano<sup>6</sup>

1 Centre for Ecology, Evolution and Environmental Changes (cE3c)/Azorean Biodiversity Group, CHANGE - Global Change and Sustainability Institute, Faculty of Agricultural Sciences and Environment, University of the Azores, Rua Capitão João d'Avila, Pico da Urze, 9700-042, Angra do Heroísmo, Portugal; 2 Tagis - Centro de Conservação das Borboletas de Portugal, 7480-152, Avis, Portugal; 3 CISE - Centro de Interpretação da Serra da Estrela, 6270-423, Seia, Portugal; 4 Universidade de Aveiro, 3810-193, Aveiro, Portugal; 5 Centre for Ecology, Evolution and Environmental Changes (cE3c), CHANGE - Global Change and Sustainability Institute, 1749-016, Lisboa, Portugal; 6 Centre for Ecology, Evolution and Environmental Changes, Faculty of Sciences, University of Lisbon, Rua Ernesto de Vasconcelos Ed. C2, Campo Grande, 1749- 016, Lisbon, 1749-016, Lisbon, Portugal

**Corresponding author(s):** Mário Boieiro (mario.rc.boieiro@uac.pt) Sandra Antunes Hugo Figueiredo Albano Soares Ana Lopes Eva Monteiro Patrícia Garcia Pereira Carla Rego José Conde Paulo A. V. Borges (paulo.av.borges@uac.pt) Artur R. M. Serrano (aserrano@fc.ul.pt)

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

Boieiro M, Antunes S, Figueiredo H, Soares A, Lopes A, Monteiro E, Garcia Pereira P, Rego C, Conde J, Borges P A V, Serrano A R M (2022): Standardised sampling of odonates (Odonata) in Serra da Estrela (Portugal) - 2013 and 2014. v1.1. Universidade dos Açores. Dataset/Samplingevent. [http://ipt.gbif.pt/ipt/resource?r=odonata\\_estrela\\_portugal&v=1.1](http://ipt.gbif.pt/ipt/resource?r=odonata_estrela_portugal&v=1.1)

## Abstract

Mountain ecosystems are crucial for biodiversity conservation since they host high biodiversity. This study reports novel information on odonate species diversity, distribution and abundance from Serra da Estrela Natural Park (Portugal). Twenty six odonate species were sampled in this protected area, including the first finding of *Macromia splendens* (Pictet, 1843). New populations of *Oxygastra curtisii* (Dale, 1834), a protected species under the Habitats Directive, was found in this Natural Park and novel distribution and ecological

data was collected for most species, including several rare species (e.g., *Aeshna juncea* (Linnaeus, 1758), *Sympetrum flaveolum* (Linnaeus, 1758)). All data were collected using standardised sampling allowing its use as baseline for long-term monitoring of Serra da Estrela mountain biodiversity.

**Keywords:** Sampling event, dragonflies, damselflies, mountain biodiversity, mountain lakes, mountain streams, protected areas

## **Project details**

**Project title:** Biodiversity, endemic and protected species associated to mountain lakes and streams of Serra da Estrela

**Personnel:** Mário Boieiro, Sandra Antunes, Hugo Figueiredo, Albano Soares, Ana Lopes, Eva Monteiro, Patrícia Garcia Pereira, Carla Rego, José Conde, Paulo A. V. Borges, Artur R. M. Serrano

**Funding:** This work was financed by Energias de Portugal (EDP) Fund for Biodiversity 2011 through project "Biodiversidade, endemismos e espécies protegidas associadas às lagoas e cursos de água da Serra da Estrela: valorização de um século de aproveitamento hidroelétrico". Fundação para a Ciência e a Tecnologia supported MB by contract DL57/2016/CP1375/CT0001.

**Study area descriptions/descriptor:** The study took place in Serra da Estrela, the highest mountain in Continental Portugal (with 1997m). Serra da Estrela includes the western extreme of the Iberian Central System which is considered one of the main mountain systems in the Iberian Peninsula. Serra da Estrela is classified as Natural Park since 1976, is part of the Natura 2000 network, and its upper areas are included in the Ramsar Convention. All study sites are included in the Serra da Estrela Natural Park, encompassing a considerable elevation gradient and habitat diversity. The study area is characterized by Atlantic and Mediterranean climates and different biogeographic regions, being an important area for biodiversity conservation, particularly for montane species.

**Design description:** Sampling took place in three main habitat-types, namely mountain streams, mountain lakes and montane vegetation. We sampled the margins of three mountain streams (Fervença, Caniça and Loriga) at three elevation levels (approximately 500, 1000 and 1500m) and 18 mountain lakes (including both natural and artificial lakes), most of them located in the Central Plateau of Serra da Estrela. Odonates were also sampled from 12 sites of representative montane vegetation of Serra da Estrela, including Juniperus- and Genista-dominated scrublands and Nardus-dominated grasslands. Overall, 39 sites were sampled during this study.

**Data published through GBIF:** [http://ipt.gbif.pt/ipt/resource?r=odonata\\_estrela\\_portugal](http://ipt.gbif.pt/ipt/resource?r=odonata_estrela_portugal)

## **Taxonomic coverage**

**General taxonomic coverage description:** The Odonata were identified to species.

## **Taxonomic ranks**

Order: Odonata

**Common names:** Dragonflies and damselflies

## **Spatial coverage**

**General spatial coverage:** The study was carried out in Serra da Estrela and its surroundings.

**Coordinates:** 40°3'54"N and 40°37'19.2"N Latitude; 8°0'54"W and 7°23'38.4"W Longitude

**Temporal coverage:** May 1, 2013 - November 30, 2014

## **Methods**

**Method step description:** Insect sampling followed the Pollard and Yates methodology (Pollard and Yates 1993): a 150m linear transect was set in each study site and adult insects of the target groups were recorded when observed at a distance of up to 5m ahead from the researcher and 2.5m for each side.

**Study extent description:** The study was carried out in Serra da Estrela Natural Park encompassing the elevation gradient and the variety of habitats of this protected area.

**Sampling description:** Odonates were sampled using a standardised methodology to ensure the possibility of biodiversity data comparison between study sites and to set a reference for mountain biodiversity monitoring in Serra da Estrela Natural Park. Insect sampling followed the Pollard and Yates methodology (Pollard and Yates 1993): a 150m linear transect was set in each study site and adult insects of the target groups were recorded when observed at a distance of up to 5m ahead from the researcher and 2.5m for each side. The insects were captured with the help of a sweeping net only in case of need to confirm their species identity, being immediately released afterwards. Sampling was carried out between 10 a.m.-6 p.m. and under favourable climatic conditions (i.e., sampling was not performed under rainy, windy, cloudy and hot weather conditions). The data were collected during the seasonal peak of activity of adult odonates in Serra da Estrela in two consecutive years (2013 and 2014).

**Quality control description:** Odonates were identified by trained taxonomists (Albano Soares, Hugo Figueiredo and Sandra Antunes) during fieldwork.

## **Datasets**

### **Dataset description**

**Object name:** Darwin Core Archive Standardised sampling of odonates (Odonata) in Serra da Estrela (Portugal) - 2013 and 2014

**Character encoding:** UTF-8

**Format name:** Darwin Core Archive format

**Format version:** 1.0

**Distribution:** [http://ipt.gbif.pt/ipt/archive.do?r=odonata\\_estrela\\_portugal](http://ipt.gbif.pt/ipt/archive.do?r=odonata_estrela_portugal)

**Publication date of data:** 2022-11-20

**Language:** English

**Licences of use:** [Creative Commons Attribution Non Commercial \(CC-BY-NC\) 4.0 License](#)

**Metadata language:** English

**Date of metadata creation:** 2022-11-17

**Hierarchy level:** Dataset

### **References**

Serrano, ARM, Soares, A, Silva, A, Fonseca, A, Bivar de Sousa, A, Figueiredo, A, Rego, C, Aguiar, CAS, Monteiro, E, Figueiredo, H, Conde, J, Boieiro, M, Garcia Pereira, P, Borges, PAV, Cardoso, P, Antunes, S, Lopes, S, Correia, T & V Simões (2014) Biodiversidade, endemismos e espécies protegidas associadas às lagoas e cursos de água da Serra da Estrela: valorização de um século de aproveitamento hidroeléctrico - Relatório final. Fundo EDP para a Biodiversidade 2011, Lisboa.