

Data Paper

Spider assemblages (Arachnida, Araneae) in burned and intact mountain heathlands in the Northern Black Forest

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Introduction

Spiders were sampled with pitfall traps from June to October 2010, April to October 2012 and April to December 2014 at two burned sites and a neighbouring reference site in the Northern Black Forest. Fire was caused by a motorbike accident at April 25, 2010 and affected approximately one hectare of wet mountain heathland (locally called “Grinden”), partly dominated by purple moor-grass and partly by dwarf mountain pines. Pitfall traps with an opening diameter of 67 mm were filled with a capture preservative and emptied every two weeks. In 2010, acetic acid was used in a 2.5 % solution with a drop of detergent added in five traps per site. In 2012 in each site three traps were filled with acetic acid and three (six in control site) with propylene glycol. In 2014, five traps per site were filled with propylene glycol. Distance between traps was 5-10 m. Spiders were identified with Heimer & Nentwig (1991), Roberts (1985, 1987) and Nentwig et al. (2016). The dataset includes 2566 (2018 adult) spiders of 102 species from 20 families. Among them are records of several species by then unrecorded or very rare in Baden-Württemberg, like *Agyneta resslii*, *Anguliphantes tripartitus*, *Evansia merens*, *Gonatium paradoxum*, *Sintula corniger*, *Achaeridion conigerum*, *Sibianor laeae*, *Talavera inopinata*. This study is one contribution to the complete inventory of spider species of the national park Black Forest, started by an unpublished inventory of the mountain heathland by Kiechle (2005) and continued by Kastner et al. (2018) and Höfer et al. (2019). Part of the data was used for an evaluation of the usefulness of propylene glycol as preservative enabling DNA barcoding for species identification (Höfer et al. 2015).

Keywords: fire, Germany, monitoring, national park, succession, wet heath

METADATA

Data set identity. Data on spider assemblages (Arachnida, Araneae) in two burned sites in comparison with one reference site of wet mountain heath in the Black Forest, Baden-Württemberg, Germany

Overall project description

Objectives of original study. Succession of the spider assemblage of a burned area of wet heath in the northern Black Forest

Principal Investigator(s)/Verantwortlicher Wissenschaftler. Dr. Hubert Höfer

Involved persons/Beteiligte Personen. Dipl.-Biol. Ina Vogel, Lena Enderle, B. Sc., Dr. Florian Raub, Dr. Steffen Bayer, Franziska Meyer

Data Source Institution. Staatliches Museum für Naturkunde Karlsruhe (SMNK), Germany

Period of study or time extent. 14.6.2010 to 25.10.2010, 17.4.2012 to 29.10.2012, 9.4.2014 to 19.12.2014

Survey design

Site description. The study area is situated in the municipality Seebach, in the Northern part of the Black Forest (Baden-Württemberg, Germany), close to the federal road B500 between Ruhstein and Schliffkopf, at a locality called Muckenloch. The area is part of the Black Forest National Park, established in 2014.

Three sites of wet heath with slightly different vegetation cover were differentiated: a part with dominance of purple moor grass (*Molinia caerulea* (L.) Moench), a part with succession of dwarf mountain pine (*Pinus mugo* subsp. *rotundata* (Link) Janch. & H. Neumayer) – both sites were directly affected by the fire in April 2010 – and a neighbouring area of wet heath, dominated by dwarf shrubs (*Vaccinium* spp., *Calluna vulgaris* (L.) Hull).

Table 1: Studied sites (Coordinates in decimal degrees WGS 84; altitude in m a.s.l.)

Site	habitat	condition	Latitude	Longitude	altitude
Brand-Kiefer	Wet heath, dwarf mountain pine	burned in 2010	48.54573	8.21887	970 - 1002
Brand-Pfeifengras	Wet heath, purple moorgrass	burned in 2010	48.54598	8.21891	970 - 1002
Kontrolle-Bergheide	Wet heath (reference site)	intact, unaffected by fire, mulched yearly since 2012	48.54541	8.21907	970 - 1002

Methods of data collection. Pitfall traps were of the conventional type with plastic cups of 300 ml and an opening diameter of 67 mm, inserted in the ground, flush with the soil surface and filled with 100 ml preserving agent (acetic acid or propylene glycol). Traps were emptied in weekly to biweekly intervals. Traps were protected against rain by non-transparent metallic roofs. Plastic funnels (opening diameter 1.6 cm, 30° angle) were inserted to minimize capture of small vertebrates. In 2010, five traps per site were filled with acetic acid in a 2.5 % solution with a drop of detergent added. In 2012, in each site three traps were filled with acetic acid, three (six in control site) with propylene glycol. In 2014, all five traps per site were filled with propylene glycol. Distance between traps was 5-10 m.

Methods of sample processing, storage and identification. Spiders were sorted out from original samples by F. Meyer, I. Vogel and L. Enderle and were subsequently stored in 75 % ethanol. All adult spiders were determined to species. Identification was done by F. Meyer, I. Vogel, H. Höfer, S. Bayer using Heimer & Nentwig (1991), Roberts (1985, 1987), Nentwig et al. (2016). Not all females of *Trochosa terrestris* were identified based on vulva preparation. Nomenclature follows World Spider Catalog (WSC 2024).

Vouchers/Material deposited. Voucher specimens are in the collections SMNK-ARA and SMNK-STUD.

Significance of data set. Part of the data were used in a diploma thesis, a bachelor thesis and one publication on propylene glycol as a useful capture preservative for spiders for DNA barcoding (Höfer et al. 2015). The data were analysed by Enderle (2016) and Höfer with respect to the succession of the spider assemblage within 5 years in the burned area and the reference site. Spiders recolonized both burned sites within the first vegetation period and similarity of burned sites with the reference increased towards the end of the study, but species richness remained higher in the reference site. Dissimilarity of the spider assemblages of the two burned sites persisted, and the assemblage in the reference site also showed a transition during the study, probably caused by a succession of the vegetation and shading conditions. The study provides records of several rarely or hitherto undocumented species in Baden-Württemberg: *Agyneta resilli* (first record), *Anguliphantes tripartitus* (first record), *Evansia merens* (see Höfer et al. 2019), *Gonatium paradoxum*, *Sintula corniger*, *Achaeridion conigerum*, *Sibianor larae* (first record), *Talavera inopinata* (first record).

DATA SET STATUS AND ACCESSIBILITY

Status

Data submitted: 2024-05-06, **Data accepted:** 2024-06-06

Academic editor: Tobias Bauer

Data editor: Alexander Bach

Latest data update: May 2024

Latest metadata update: May 2024

Accessibility

Storage location and medium. Metadata and data files are stored by Arachnologische Gesellschaft, data are included in the ARAMOB database using the database framework Diversity Workbench (<https://diversityworkbench.net/>), data are accessible via <https://aramob.de/en/data/data-exploitation/> Filter: Project ARAMIT_Hoefler2024

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DOI: 10.30963/aramit6706

DATA STRUCTURAL DESCRIPTORS

Data Set Files

Hoefer2024_obsdata.csv, 528 KB, spider abundance data set

Hoefer2024_plotdata.csv, 2 KB, locations of the sampling sites (decimal coordinates, WGS84)

Authentication procedures

MD5 hash checksums generated by WinHash v.1.6.6787:

Hoefer2024_obsdata.csv: BB219783750DCFCFF597E96CA1BCD8FC

Hoefer2024_plotdata.csv: 21C121B180D2D9BEE05319814596AC9C

SUPPLEMENTAL DESCRIPTORS

Publications using the data set. Material sampled in the first year (2010) was analysed for a Diplom thesis (Vogel 2011), the whole dataset by Enderle (2016) for her Bachelor thesis. Parts of the data were analysed in Höfer et al. (2015).

Acknowledgements

We thank Charly Ebel (Nationalpark Schwarzwald) for the indication of the fire and support during the study. Ina Vogel and Lena Enderle contributed to fieldwork and identification during their Diplom- and Bachelor theses. We also thank Franziska Meyer and Natalie Zarte for help in the field and Dr. Steffen Bayer for checking some identifications. Tobias Bauer made valuable comments.

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