Project BioCombs4Nanofibers

D2.6 Collection of calamistrum images

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<td>02.08.2021  Anna-Christin Joel, Marco Meyer, Margret Weissbach</td>
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1. Goals and Detailed Description

Overall goal: D2.6 is a publication on the project web-site of SEM images of the calamistrum of various spiders under investigation together with images of the spiders.

*Uloborus plumipes*

The feather-legged lace weaver, *Uloborus plumipes*, belongs to the family Uloboridae. It is also called “garden center spider” as it inhabits garden centers across the world. This species or sister species are already well studied and several publication deal with its cribellate threads and spinning process (selection of publications: Peters 1984; Kovoor & Peters 1988; Joel et al. 2015; Joel et al. 2016; Bott et al. 2017; Heiss, Park & Joel 2018). This species was the first to describe a ripple structure on the calamistrum, providing anti-adhesive properties (Joel et al. 2020).

Fig. 1 *Uloborus plumipes* and a close-up of its calamistrum.
Deinopis subrufa

The rufous net-casting spider, *Deinopis subrufa*, belongs to the family of Deinopidae. It was assumed to be closely related to Uloboridae, however recent literature revises their phylogenetic relation (Wheeler et al. 2017). Deinopids build a modified orb-web, which is thrown onto approaching prey. Aside from the ripples, described already for Uloborids, their calamistrum exhibit teeth-like structures as peculiarity. These teeth are assumed to pick up and transport cribellate threads (Joel et al. 2016), most likely as an adaptation to their special web geometry.

![Fig. 2 Deinopis subrufa and a close-up of its calamistrum.](image)

Eresus walckenaeri

The ladybird spider, *Eresus walckenaeri*, belongs to the family of velvet spiders Eresidae. Its name is due to its males, which have a red abdomen with black spots. There are no up-to-date descriptions of the cribellate thread production in Eresidae, however there is one older publication about thread structure and spinnerets (Peters 1992). The calamistrum and its properties are not described so far.

![Fig. 3 Male Eresus walckenaeri and a close-up of the calamistrum of E. walckenaeri.](image)
**Kukulcania hibernalis**

The southern house spider, *Kukulcania hibernalis*, belongs to the family of Filistatidae. This family is phylogenetically distant from most other cribellate species. The southern house spider inhabits large areas of America. During its web production, it deposits its cribellate threads onto supporting radial threads. The complex thread production has been investigated previously, without a description of the calamistrum (Grannemann et al. 2019).

![Image of Kukulcania hibernalis](image)

**Fig. 4 Kukulcania hibernalis** and its calamistrum.

**Literature:**


2. Evaluation of Goals and Resulting Actions

This report has been published on the website of the BioCombs4Nanofibers project (http://biocombs4nanofibers.eu) and will be uploaded to Zenodo. Additionally, a reference to this report will be published on Twitter and ResearchGate as project update for our followers.

This report is part of the project BioCombs4Nanofibers that has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 862016.