



SWEDISH TAXONOMY INITIATIVE PROJECT REPORT

Project period: 2006–2008

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FUNGI:

Taxonomic and phylogenetic studies of Leotiomyces (Ascomycetes), especially Rhytismatales in Sweden

The two-year project that is here reported focused on taxonomic and phylogenetic studies of Rhytismatales, a group of ascomycetes that are represented by 23 genera and 67 species in Sweden.

Over 700 species are known world-wide. A majority of the species are strictly associated with certain host plants, and the fruiting bodies are usually seen as small black dots on dead plant material.



Sporomega degenerans on the stem of *Vaccinium uliginosum*. The fruiting bodies look like black “mouths” with the spore bearing layer visible as a pale part inside.

The species are in many cases common but poorly known, and in particular the genus level taxonomy has been debated.

To be able to suggest an alternative stable taxonomy of the order, DNA-based studies of 91 species from Europe, Asia, North America and New Zealand were undertaken.

Thirty-nine of these species were from Sweden, collected in this project. The results clearly show that the earlier use of spore shape and shape of fruiting bodies to circumscribe genera lead to unnatural genera, and the phylogenies instead support other morphological characters to be more useful.



Lophodermium oxycocci on *Vaccinium oxycoccos* (cranberry). The genus *Lophodermium*, mostly defined by elliptical fruiting bodies, needs to be recircumscribed.

Over 2/3 of the Swedish species need to be transferred to other genera and several new genera also need to be described. The results, including a new circumscription of the order and its included families, were published in the highly regarded journal *Mycologia* in 2011.

150 specimens were collected in Sweden from the southernmost part (Skåne) up to the mountains in the northern parts of the country (Västerbottensfjällen). These collections included several species not collected in Sweden in over 100 years and two collections that likely represent undescribed species.



Hyphelion scirpinum on the (earlier submerged) stem of *Schoenoplectus lacustris*. Had not been collected in Sweden for around 100 years, but was easily found in the first lake the author jumped into.

To increase the knowledge and number of collections of Rhytismatales in Sweden, two popular science papers and a host-based key to the Swedish species was published.

The project has prepared for future taxonomic studies of the order. The generic circumscription in the order now needs to be revised based on the phylogenetic results.

Since the fungi often have a wide geographic range, and a close relationship between geographically separated species has been demonstrated, future studies also need to be based on global material.

There is an interest from non-Swedish taxonomists to continue this work. A lack of funding stops the project from continuing, but the results provide a strong basis for other researchers to continue with the taxonomic work of the order.

Peer-reviewed publications

Lantz, H., Johnston, P.R., Park, D. and Minter, D.W. 2011. Molecular phylogeny reveals a core clade of Rhytismatales. *Mycologia* 103: 57–74.

DOI: 10.3852/13-174

Lantieri, A., Johnston, P.R., Park, D., Lantz, H., and Medardi, G. 2011. *Hypoderma siculum* sp. nov. from Italy. *Mycotaxon* 118: 393–401. DOI: [10.5248/118.393](https://doi.org/10.5248/118.393)

Popular science publications

Lantz, H. 2008. Mikrosvampar – Okända skurkar och välgörare. *Fauna och Flora* 103: 36–40.

Lantz, H. 2007. Endofyter i allmänhet och Rhytismatales i synnerhet. *Svensk Mykologisk Tidskrift* 28: 8–17.

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