



SWEDISH TAXONOMY INITIATIVE PROJECT REPORT

Project period: 2002–2007

Leif Tibell
Uppsala University

LICHENS:

Phylogeny, generic delimitations, and revision of the crustose lichen genus *Polyblastia*, with an assessment of distribution and threats

Polyblastia A. Massal. is a genus of lichenized fungi belonging to Verrucariaceae (Ascomycota). Traditional classification heavily rested on a few cardinal characters, primarily ascoma structure and spore morphology, but the delimitation of *Polyblastia* was problematic.

Using DNA sequences from nuLSU and RPB1 the position of the '*Polyblastia* group' as a strongly supported monophyletic group within Verrucariaceae was confirmed. A three marker phylogeny (including nuITS) based on a wider taxon sampling revealed strongly supported clades within the '*Polyblastia* group'. Thus *Polyblastia* s. str. was recognized. In this restricted sense *Polyblastia* is not only monophyletic, but is also morphologically rather uniform.

The phylogeny of the strongly supported *Thelidium* clade is not completely resolved. The group contains mainly endolithic species of *Thelidium*, *Polyblastia*, *Staurothele* and *Verrucaria*, as currently classified.

In a different clade, *Verrucaria rupestris*, the type of *Verrucaria*, is a sister taxon to the *Henrica melasporal*/*H. theleodes* clade.

Trimmatothele perquisita, the type of *Trimmatothele*, forms a strongly supported group with a *Verrucaria* species.

The genus *Sporodictyon*, until recently included in *Polyblastia*, is resurrected. Species delimitation in *Sporodictyon* is investigated, and the morphological variation within and between the monophyletic groups is evaluated in an effort to reconcile morphological and molecular data.

A taxonomic revision of *Sporodictyon*, occurring in Northern Europe and the adjacent Arctic is provided, and two new species are described.

A comprehensive material is investigated, a key to the species is provided and several names are, based on studies of type material and lectotypifications, suggested to be taxonomic synonyms.

A generic revision of the family Verrucariaceae, based on recent molecular phylogenetic analyses and previous morphological studies is offered.

Three new genera (*Hydropunctaria*, *Parabagliettoa* and *Wahlenbergiella*) are proposed.

Several other monophyletic groups are identified for which the taxon sampling is insufficient for proposing taxonomic changes.

The nomenclature of the genera in the family is revised, including the study of type material, and several lectotypifications are suggested. Established synonymies are re-assessed.

The new genus *Atla* (Verrucariaceae) is described and three new species to science, *A. alpina*, *A. palicae* and *A. praetermissa*, are included.

An identification key to the species and a revision of the genus is supplied.



Calciferous schist at the waterfall Ristafallet, Jämtland, Sweden.
An excellent habitat in a locality rich in *Polyblastia*.



Henrica melaspora, a species earlier referred to *Polyblastia*. It has black fruiting-bodies (perithecia) and a rimose, pale thallus. It grows along lakeshores and rivers. In the project transferred to *Henrica*.



Asci in *Polyblastia bryophila*. Eight muriform spores are contained in one ascus.



Large, muriform, brown spores in *Sporodictyon cruentum* (earlier *Polyblastia cruenta*), a species that in the project was placed in the resurrected genus *Sporodictyon*.