

Review

Nordic Lichen Flora, Volume 6: Verrucariaceae 1

Reviewed by

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The production of the Nordic Lichen Flora is a long term project which aims at the provision of tools for the identification of lichenized fungi in an area from Finland over Scandinavia to Iceland. Excellent quality of the species accounts and its relevance for identification attempts for material from a much wider geographic area in the arctic to cool-temperate regions of the Northern Hemisphere have always kept anticipation high among lichenologists whenever a new volume is announced to be published.

For the first part of Volume 6, an author collective with international leaders in their field presents the results of substantial taxonomic process in a mix of genera from the species rich family Verrucariaceae. The choice of genera for this first part is based on the availability of recent revisions with a molecular backbone. As a whole these taxa form neither a morphologically nor phylogenetically homogenous group.

Covered are all foliose species (*Dermatocarpon*), most squamulose taxa without hymenial algae (all of the traditional “catapyrenoid genera”: *Catapyrenium*, *Clavascidium*, *Heteroplacidium*, *Placidium*, *Placidiospis*, *Involucropyrenium*, but neither *Agonimia* nor *Normandina*) and a selection of crustose genera with more or less muriform spores and without hymenial algae (*Atla*, *Henrica*, *Polyblastia* s.str., *Sporodictyon*, but neither *Thelidium* s.l., nor crustose species in *Agonimia*). Excluded and left for a future second part of Volume 6 are all crustose species with single celled spores (e.g., *Verrucaria* s.l.)

as well as those with submuriform to muriform spores which are placed in the “*Thelidium*-clade” instead of the “*Polyblastia*-clade” by Savič et al. (2008).

The now available first part includes both taxonomic novelties and distribution maps not published before. Four new lectotypes are proposed, for *Dermatocarpon luridum*, *Heteroplacidium fusculum*, *Polyblastia albida* and *Polyblastia fuscoargillacea*. *Clavascidium alvareense* is a new combination. The species descriptions are excellent, very detailed, with many helpful comments on similar species, the ecological requirements of each taxon and its known distribution not only in the Nordic countries but also in other parts of the world. Photographs of the outer appearance of 67 taxa are provided in an appendix and these images are also provided in high resolution on a CD. The color images which are generally presented at two different magnification levels will be a substantial help for the field biologist to prepare themselves for collecting trips. Images for anatomical sections instead are missing. As a consequence some of the characters, e.g., the medullary and cortex structures which are important for the identification of some of the squamulose and foliose species may be difficult to apply for beginners. Excellent microscope images which help with the interpretation of these characters in the “catapyrenoid” genera were published by Prieto et al. (2010) and Prieto et al. (2012). Diagnostically important types of epinecral layers in the cortex of

Dermatocarpon are illustrated in Heiðmarsson (1997).

From the practical user perspective a serious inconvenience is the lack of a morphology-based tool (key) to separate the species covered in this book from only distantly related look-alike taxa which are placed in other clades of the family based on molecular grounds. Without *a-priori* knowledge on the phylogenetic placement of a specimen at hand the user will easily make the mistake to key out several species from the *Thelidium*-clade in the sense of Savić et al. (2008), crustose species in the genus *Agonimia* (e.g. *A. gelatinosa*, *A. allobata*) or even two taxa which do not belong to the family Verrucariaceae (*Polyblastia gothica*, *P. helvetica*) straight into *Polyblastia* following the generic key provided in this first part of the Verrucariaceae volume. As a result, after using the key to species, careful checks are required if the specimen at hand really fits sufficiently with one of the detailed species descriptions in *Polyblastia* s.str. or if it is a candidate for one of those look-alike taxa from other clades which will be described in more detail only in one of the forthcoming next parts of Volume 6 in the Nordic Lichen Flora. For the moment brief descriptions for some of the missing taxa, e.g., for crustose representatives of *Agonimia*, *Polyblastia gothica*, *P. helvetica* and *P. peminosa*, can be found with relative ease elsewhere, e.g., in Orange (2012), but for others (fortunately rare species), Servít (1953) and Zschacke (1934) have to be consulted.

Problems also remain in the most distinctive group in the Verrucariaceae, the large foliose species of *Dermatocarpon*. Some of the most visible and widespread taxa among these lichens are lumped into a very wide concept of *Dermatocarpon miniatum*. This approach is pragmatic and allows a reliable identification by morphological characters, but it will render invisible substantial differences in ecology and obscures the potential threat status for some of the distinctive clades included in this taxon. Only in the notes this taxon is referred to as “*D. miniatum-complex*” with a genetic diversity which “contains clades which call for species recognition.” It is a sobering conclusion that despite much molecular work already done, species circumscriptions and the naming of clades within the *D. miniatum* agg. has still not settled, even for specimens from this rather well sampled part of the European continent. Most of the Verrucariaceae

are likely to be largely unfamiliar for the vast majority of naturalists, but they are all presented with additional national language names. In this approach the authors are in line with a trend across European countries to introduce local names. Hopefully these national language names will help to popularize lichenized fungi among non-specialist groups of the public and not least make them more accessible to the minds of policy and decision makers.

This first part of Volume 6 in the Nordic Lichen Flora is a milestone towards a comprehensive solution to the challenge of identifying Verrucariaceae from Northern arctic to cool-temperate areas. It brings together in one place the results of modern revisions scattered in journals which due to expensive paywalls are often difficult to access by lichenologists working as contractors on ecological assessments or for amateurs without connection to a public university or museum. Its value extends far beyond its use for the Nordic region of the European continent. Arctic and upland areas in northern parts of North America and Asia have lichen biota which may have a substantial overlap with the species treated in this book. The detailed descriptions will help to recognize these species but also help to identify candidates for true North American or Asian endemics.

LITERATURE CITED

- Heiðmarsson, S. 1997. Pruina as a taxonomic character in the lichen genus *Dermatocarpon*. *The Bryologist* 99: 315.
- Orange, A. 2012. British and other pyrenocarpous lichens. Published online by National Museum of Wales. Cardiff. <https://museum.wales/media/13849/Orange-A-2013-British-and-other-pyrenocarpous-lichens.pdf>
- Prieto, M., G. Aragon & I. Martínez. 2010. The genus *Catapyrenium* s. lat. (Verrucariaceae) in the Iberian Peninsula and the Balearic Islands. *Lichenologist* 44: 637–684.
- Prieto, M., G. Aragon, I. Martínez, C. Gueidan & F. Lutzoni. 2012. Molecular phylogeny of *Heteroplacidium*, *Placidium*, and related catapyrenoid genera (Verrucariaceae, lichen forming Ascomycota). *American Journal of Botany* 99: 23–35.
- Savić, S., L. Tibell, C. Gueidan & F. Lutzoni. 2008. Molecular phylogeny and systematics of *Polyblastia* (Verrucariaceae, Eurotiomycetes) and allied genera. *Mycological Research*: 1307–1318.
- Servít, M. 1953. Nove druhy Verrucarii a pribuznych rodu. *Species novae Verrucariarum et generum affinium*. *Rozprawy Československé Akademie Věd*. 63: 1–33.
- Zschacke, H. 1934. Epigloeaceae, Verrucariaceae und Dermatocarpaceae. Dr. L. Rabenhorst's Kryptogamenflora von Deutschland, Österreich und der Schweiz, Vol. 9, 1(1). Akademische Verlagsgesellschaft, Leipzig.